



Board of Public Works & Safety and Stormwater Board

Regular Meeting Agenda

2:00 p.m. April 26, 2021

Goshen Police & Court Building, 111 East Jefferson Street, Goshen, Indiana

To access online streaming of the meeting, go to <https://goshenindiana.org/calendar>

Call to Order by Mayor Jeremy Stutsman

Approval of Minutes – April 12, April 19

Approval of Agenda

- (1) Mechanical License: Patrick K. McKelvey of Emergency Power Sources, LLC
- (2) Electrical License: Daniel J. Kierpaul of D & D Electric
- (3) Lease Agreement with Horizon Education Alliance, Inc.
- (4) Agreement for Lawn Services with Colin Avila d/b/a Yardshark
- (5) Downtown Main Street Streetscape Entry Arch Evaluation & Design, JN: 2016-0038
- (6) Agreement for Tree and Stump Removal with Michiana Tree Works, Inc.
- (7) Road Closure, 400-block N. 8th St.
- (8) E. Reynolds St. Lane Restrictions, JN: 2020-0017
- (9) North Main St. Lane Restrictions, JN: 2016-0020
- (10) Moving / Storage Container Placement, 300-block S. 5th St.
- (11) Goshen Government Operations Climate Action Plan

Privilege of the Floor

Approval of Civil City and Utility Claims

Adjournment



**Building Department
CITY OF GOSHEN**

204 East Jefferson Street, Suite 5 • Goshen, IN 46528-3405

Phone (574) 534-1811 • Fax (574) 533-8626 • TDD (574) 534-3185
building@goshencity.com • www.goshenindiana.org

April 22, 2021

TO: The Board of Public Works & Safety
Storm Water Board

RE: MECHANICAL LICENSE REQUEST

Patrick K. McKelvey of Emergency Power Sources LLC, 710 Lincolnway E, Mishawaka, Indiana, has met the requirements for a City of Goshen Mechanical license. He passed the Prometric Exam on January 11, 2016, in Elkhart, Indiana, receiving a score of 78%. Request motion to approve Mechanical License for Patrick K. McKelvey for the City of Goshen.

Respectfully,

A handwritten signature in black ink that reads "Myron Grise". The signature is written in a cursive style and is contained within a thin black rectangular border.

Myron Grise
Assistant Building Commissioner

MG/jn



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April 22, 2021

TO: The Board of Public Works & Safety
Storm Water Board

RE: ELECTRICAL LICENSE REQUEST

Daniel J. Kierpaul of D & D Electric, 8230 W Old Rd 30, Etna Green, Indiana, has met the requirements for a City of Goshen Electrical license. He passed the Prometric Exam on December 12, 2009, in Fort Wayne, Indiana, receiving a score of 70%.

Request motion to approve Electrical License for Daniel J. Kierpaul for the City of Goshen.

Respectfully,

A handwritten signature in cursive script, appearing to read "Myron Grise", enclosed in a thin black rectangular border.

Myron Grise
Assistant Building Commissioner

MG/jn



**Legal Department
CITY OF GOSHEN**

204 East Jefferson Street, Suite 2 • Goshen, IN 46528-3405

Phone (574) 537-3820 • Fax (574) 537-3817 • TDD (574) 534-3185
www.goshenindiana.org

To: Board of Public Works and Safety
From: Bodie J. Stegelmann
Date: April 23, 2021
Re: Lease Agreement with Horizon Education Alliance, Inc.

Attached for the Board's approval and execution is a Lease of Building Space with Horizon Education Alliance, Inc. for the second floor office space located at 124 East Washington Street. The initial term of the agreement is for two years, with extension options.

Proposed Motion: Move to approve the Lease of Building Space with Horizon Education Alliance, Inc. and authorize Mayor Stutsman to execute such agreement.

LEASE OF BUILDING SPACE

THIS LEASE OF BUILDING SPACE, made and entered into this _____ day of _____, 2021, by and between the City of Goshen, acting by and through its Board of Public Works and Safety, hereinafter referred to as “LESSOR,” and the Horizon Education Alliance, Inc., hereinafter referred to as “LESSEE.”

1. Property Rented. LESSOR hereby leases to LESSEE, and LESSEE agrees to lease from LESSOR, the second floor at 124 East Washington Street, Goshen, Indiana.

2. Term. The term of this Lease shall be for a period of two (2) years, commencing on May 1, 2021 and terminating on April 30, 2023. The Lease shall renew for one (1) year extensions thereafter (under the same terms and conditions, other than rental amounts detailed in Paragraph 4) unless one party gives to the other party notice of termination more than ninety (90) days prior to the termination date of the then current term.

3. Possession. LESSEE’s right to possession and the obligations of LESSEE under this Lease shall commence on May 1, 2021.

4. Rental. LESSEE shall pay to LESSOR as rent for the leased premises Five Hundred Fifty Dollars (\$550.00) per month, in advance, on the 1st day of every month during the first (1st) year term of this Lease. The first such payment shall commence on May 1, 2021. LESSEE shall pay to LESSOR as rent for the leased premises Nine Hundred Dollars (\$900.00) per month, in advance, on the 1st day of every month during the second (2nd) year term of this Lease.

In the event that the parties agree to renew the lease for a third (3rd) and fourth (4th) year, LESSEE shall pay to LESSOR as rent for the leased premises One Thousand One Hundred Dollars (\$1,100.00) per month, in advance, on the 1st day of every month during the third (3rd) and fourth (4th) year Lease term.

At least Ninety (90) days prior to the end of the fourth (4th) term year, the parties will renegotiate the terms and conditions of the Lease.

5. Use of Premises. The premises shall be used by LESSEE for General Office purposes. In connection with the use of the premises, LESSEE shall:

(a) Conform to all applicable laws and regulations of any public authority affecting the premises and their use, and correct at LESSEE's own expense any failure of compliance created through LESSEE's fault or by reason of LESSEE's use.

(b) Refrain from any activity that would make it impossible to insure the premises against casualty, or would increase the insurance rate to LESSOR (unless LESSEE agrees to pay for the increase in the insurance rate).

(c) Refrain from any use that would be reasonably offensive to the LESSOR, other tenants, or owners or users of adjoining premises, or which would tend to create a nuisance or damage the reputation of the premises.

(d) Place signs or other markings or insignia pertaining to the business or activities of LESSEE only as agreed upon with LESSOR, which consent shall not be unreasonably withheld. LESSEE shall refrain from placing any antenna, aerial, or other device to the exterior or interior walls, windows, or roof of the premises without the written consent of the LESSOR.

6. Maintenance and Repairs. Prior to LESSEE taking possession of the Leased Premises, the parties shall perform an examination of the premises together and prepare a report indicating the existing condition of the premises. LESSOR agrees to maintain, in the present condition, the electrical wiring, plumbing/sewer lines, the structural portion of the leased premises, and roof. LESSEE shall repair, replace, and maintain the rest of the premises, including, but not limited to, the heating system, cooling system, exterior entrance, all glass and show windows and moldings, and interior of the premises. LESSOR shall have the right at all times to enter the premises to inspect the same, and make repairs, alterations, or modifications as deemed appropriate by LESSOR. However, notwithstanding any of the foregoing, LESSEE shall be responsible for all repairs or maintenance required as a result of the negligence, malconduct, or other actions of LESSEE, its agents, employees, and invitees, including damages or expenses arising as to the property due to violations of the use restrictions set forth above. LESSEE shall keep its portion of the interior of the premises in a clean, slightly, and healthful condition.

7. Utilities. LESSEE shall pay and be responsible for all utility expenses incurred at the premises during the term of this Lease, to include electricity, gas, and telephone service.

8. LESSEE's Other Responsibilities and Insurance. LESSEE shall be responsible for the routine cleaning of the area being leased by LESSEE. Additionally, LESSEE shall secure and maintain in force and effect liability insurance protection as and for the activities of LESSEE and the agents, employees, and invitees of LESSEE, in a minimum amount of One Million Dollars (\$1,000,000.00) per person and One Million Dollars (\$1,000,000.00) per accident for personal injury and death, or such other amounts as LESSOR and LESSEE shall agree in writing. LESSEE shall provide LESSOR with a certificate indicating the existence of such insurance, and the naming of LESSOR as a party insured under such insurance protection. Further, LESSOR shall be entitled to a minimum of ten (10) days' written notice of any cancellation of such insurance protection.

LESSEE shall be solely responsible for the maintenance, repair, or loss of any and all personal property, inventory, furniture, fixtures, or equipment of LESSEE used in the premises aforesaid. LESSEE shall carry fire, casualty, and liability insurance on the property of LESSEE located on such lease premises. LESSEE hereby releases and discharges LESSOR and the agents, employees, and invitees of LESSOR, from any liability or responsibility as and for such personal property of LESSEE.

LESSOR shall pay and be responsible for fire and extended coverage insurance on the improvements situated on said real estate.

LESSEE shall indemnify and defend LESSOR from any claim, loss, or liability arising out of or relating to any activity of LESSEE on the leased premises, or any condition of the leased premises in the possession or under the control of LESSEE. Such indemnification shall include costs of defense and legal fees.

9. Snow Removal and Trash Service. LESSEE shall be responsible for snow removal from LESSEE's main entrance area and shipping area. LESSEE shall be responsible for trash removal service.

10. Damage to or Destruction of Premises. Should the premises herein being leased be substantially damaged or destroyed so as to render the same uninhabitable, for a period of thirty (30) days or more, then either party shall have the right and option to terminate this Lease. Should the leased premises be uninhabitable, in total for any period of time, the monthly rental herein stated shall be abated pro-rata for each day of uninhabitability for

LESSEE. Should the premises be partially usable by LESSEE, but not totally usable by LESSEE, rent shall be prorated accordingly based upon the diminution in square footage usage.

11. Taxes and Assessments. LESSOR shall pay and be responsible for all real estate taxes assessed and accruing as to the real estate aforescribed during the term of this Lease. LESSEE shall pay and be responsible for all personal property taxes assessed and accruing as to any personal property of LESSEE kept at the premises being rented by LESSEE.

12. Waste. LESSEE agrees not to commit waste nor suffer to be committed waste upon the leased premises, and further agrees to maintain the same in a neat, clean, and tidy condition free from litter and debris, and to use and occupy said premises in strict conformance with all applicable laws and ordinances.

13. Defaults and Remedies. A default by LESSEE will have occurred under this Lease if: (a) LESSEE fails to pay the full amount of any installment of rent on or before the date when it is due; (b) LESSEE fails to observe or perform any material provision of this Lease; or (c) LESSEE abandons, quits or vacates the premises. If a default has occurred under this Lease and such default continues for thirty (30) days after written notice to LESSEE, except as provided herein, LESSOR has the following remedies: (a) the right to reenter and repossess the Premises, and the right to remove all persons and property from the Premises, all in a lawful manner; (b) the right to give LESSEE notice of LESSOR's termination of this Lease as of a date specified in the notice, the date to be not earlier than the date of the notice; (c) the right to relet the Premises, or any part of it, for the account of LESSEE, for such term or terms and on such conditions as LESSOR, in its sole discretion, determines; LESSOR shall not be responsible or liable to collect any rent payable upon any reletting; (d) the right to advance money or make any expenditure to cure any default of LESSEE other than default in payment of rent; and (e) the right to collect from LESSEE by any lawful means:

- a. any rent due and unpaid;
- b. any deficiency which results from default of LESSEE and the failure of any subletting to give LESSOR the rent provided by this Lease;
- c. any money advanced or expenditure made by LESSOR pursuant to this Lease plus eighteen percent (18%) interest per annum;

d. any other amount which LESSEE owes LESSOR pursuant to this Lease, including future rents called for hereunder without the necessity of suing in installments as the payments become due; and

e. all of LESSOR's attorneys' fees for enforcing this Lease, including, but not limited to fees for lawyers, legal assistants and other members of the lawyer's staff, together with out-of-pocket expenses or costs incurred in enforcing this Lease.

Upon exercise by LESSOR of its right to reenter and repossess, or to remove persons and property from, the Premises or upon termination of this Lease as set forth above, LESSEE and each person claiming by or through LESSEE shall forthwith quit the Premises and surrender it to LESSOR, and LESSOR shall be entitled to all remedies at law or in equity to effect this right. Upon reentry, LESSOR shall again have possession of the Premises as though this Lease had not been made. Upon the date specified in LESSOR's notice of intention to terminate this Lease, the Lease shall terminate, the LESSEE and any person claiming by or through him shall become a tenant at sufferance. Upon LESSEE's vacation of the Premises, LESSEE shall remove therefrom all of his personal property. If LESSEE fails to so remove, said property shall be deemed as abandoned by LESSEE and shall become the property of LESSOR.

14. Subrogation. LESSOR and LESSEE, and all parties claiming under or through them, hereby mutually release and discharge each other from any and all claims and liabilities arising from or caused by any hazard covered by insurance on the property described in Exhibit A, or covered by insurance in connection with property on, or activities conducted on, the real estate or improvements described in Exhibit A, regardless of the cause of the damage or loss, provided that such release shall not operate in any case where the effect is to invalidate such insurance coverage.

15. Alterations. LESSEE shall have the right, but only with LESSOR's prior written consent, which will not be unreasonably withheld, to make changes, additions, and alterations inside the premises, provided that such work shall not affect the structural parts of the premises, that such is done in a good and workmanlike manner, that permits therefore from all public authorities, as required, are obtained and paid for, that all costs and expenses arising from such undertaking as well as all damage occasioned in connection therewith shall be paid

by LESSEE, that all such changes shall at the end of this term remain the property of LESSOR, unless such consent otherwise provides, and that LESSEE shall promptly remove any resulting mechanic's liens placed on the premises.

16. Surrender of Premises. Time is of the essence of this agreement. LESSEE agrees to pay rent as it becomes due and payable and deliver up possession of said premises on the date of termination of this Lease or any extension or renewal thereof. Upon such surrender, the leased premises shall be in "broom clean" condition, and in the same order and repair in which LESSEE received the same, as noted by the report prepared pursuant to paragraph 7, ordinary wear and tear and damage by the elements excepted. Failure of LESSEE to surrender premises upon termination of this lease, or upon default by LESSEE under the terms and conditions thereof, shall obligate LESSEE to pay any and all costs of enforcement incurred by LESSOR including attorney fees and court costs as aforesated.

17. Sublet and Assignment. LESSEE shall be prohibited from subletting or assigning all or any part of the leased premises without the express written consent of the LESSOR.

18. LESSOR's Right to Enter and Inspect. LESSOR or its agents shall have the right to enter the premises as all reasonable times for the purposes of showing the premises to prospective buyers to tenants, placing "For Sale" or "For Rent" signs on the premises, examining its condition or use, and for performing either LESSOR's or LESSEE's obligations under this Lease.

19. Authority. The undersigned persons executing this Lease for and on behalf of the LESSOR and the LESSEE hereby certify that they are duly authorized and empowered by the governing board and/or charter of said organization, if not signing as an individual, to enter into this Lease for and on behalf thereof.

20. Notices. Any notices required under this Lease shall be tendered to the parties at the following addresses, or at such other addresses as the parties shall from time to time notify the other during the term of this Lease, and notice shall be deemed given on the date of postmark, if given by registered or certified mail:

LESSOR: City of Goshen
Legal Department

204 East Jefferson St., Suite 2
Goshen, IN 46528

LESSEE: Horizon Education Alliance, Inc.
124 E. Washington Street, 2nd FL
Goshen, IN 46528

21. Americans with Disabilities Act. LESSEE shall be solely responsible for all costs of compliance with Titles I and III of the Americans with Disabilities Act (“Act”) with regard to LESSEE’s portion of the leased premises, except that LESSOR shall make any initial structural changes required to comply with the Act at LESSOR’s expense. LESSEE shall indemnify and hold LESSOR harmless from any and all claims, judgments, damages, penalties, fines, costs, liabilities, or losses, including, but not limited to, LESSOR’s attorney fees, resulting from LESSEE’s failure to fully comply with the Act

22. Environment. LESSEE agrees to indemnify and hold LESSOR harmless from any environmental contamination which may occur on the leased premises during the term of this Lease that may be in violation of any local, state, or federal laws pertaining to environmental contamination. LESSEE shall be responsible for the full cost of any remediation and cleanup of contamination introduced or released on the leased premises by LESSEE, its agents or invitees, during the term of this Lease, and for any other costs, expenses and reasonable attorney fees incurred by LESSOR in connection with any such contamination.

Similarly, LESSOR agrees to indemnify and hold LESSEE harmless from any environmental contamination which may have existed on the leased premises prior to the commencement of the term of this Lease, which contamination may be in violation of any local, state, or federal laws pertaining to environmental contamination. LESSOR shall be responsible for the full cost of any remediation and cleanup of contamination introduced or released on the leased premises prior to the commencement of this Lease, and for any other costs, expenses, and reasonable attorney’s fees incurred by LESSEE in connection with any such contamination.

23. Binding Effect; No Assignment. This agreement shall be binding upon and shall inure to the benefit of the respective successors, heirs, beneficiaries, and assigns of the parties hereto; provided, however, that under no circumstance shall LESSEE be entitled to

assign any of the rights or obligations under this Lease without the express written consent of LESSOR, which consent can be withheld at LESSOR's sole discretion.

IN WITNESS WHEREOF, the parties have executed this Lease of Building Space the day and year first above written.

LESSOR: HORIZON EDUCATION ALLIANCE, INC.

By: _____
Brian C. Wiebe, CEO

LESSEE: CITY OF GOSHEN

By: _____
Jeremy P. Stutsman, Mayor



CITY OF GOSHEN LEGAL DEPARTMENT

City Annex
204 East Jefferson Street, Suite 2
Goshen, Indiana 46528-3405

Phone (574) 537-3820 • Fax (574) 537-3817 • TDD (574) 534-3185
www.goshenindiana.org

April 26, 2021

To: Board of Public Works and Safety
From: Shannon Marks
Subject: Agreement for Lawn Services with Colin Avila dba Yardshark

The City solicited proposals for lawn mowing and maintenance services for certain City of Goshen properties for the 2021 season, with an option to renew the agreement for the 2022 season. Proposals were received from Colin Avila dba Yardshark and Stiver Group Inc. dba Stiver Lawn Care.

Attached for the Board’s approval and execution is an agreement with Colin Avila dba Yardshark for the lawn mowing and maintenance services. The city will pay the contractor based on an established price for the lawn services provided to a specific location identified as a “service area.” The cost to provide lawn services is based on a lump sum cost for the season for eleven of the service areas of which eight will be paid by Civil City and three will be paid by Redevelopment. (The total lump sum cost for entire season to Civil City is \$16,650 and to Redevelopment is \$2,500.) The cost for services is based on a unit cost for each mow and unit cost for fall clean up for four other services areas of which two will be paid by Civil City and two will be paid by Redevelopment. The City will give the contractor notice of when the contractor shall begin or discontinue the lawn services to a service area which are based on a unit cost for each mow and unit cost for fall clean-up. The costs for lawn services to each service area are set forth in Exhibit B of the agreement.

Suggested Motion:

Move to approve and execute the Agreement for Lawn Services with Colin Avila dba Yardshark.

AGREEMENT
FOR
CITY OF GOSHEN LAWN SERVICES

THIS AGREEMENT is entered into on _____, 2021, which is the last signature date set forth below, by and between **Colin Avila d/b/a Yardshark** (“Contractor”), whose mailing address is PO Box 2101, Michigan City, IN 46361, and **City of Goshen, Indiana**, a municipal corporation and political subdivision of the State of Indiana acting through the Goshen Board of Public Works and Safety and Stormwater Board and the Goshen Redevelopment Commission (“City”).

In consideration of the terms, conditions and mutual covenants contained in this agreement, the parties agree as follows:

1. Contractor Duties

- 1.1. Contractor shall provide City the lawn mowing and maintenance services work for certain City of Goshen properties in accordance with the specifications for such services that are made a part of and attached to this agreement as Exhibit A.
- 1.2. For the purposes of this agreement, all duties to be performed by Contractor shall be referred to as the “Lawn Services,” and shall include all labor, equipment, materials, tools, insurance, supervision, and all other items necessary to provide the Lawn Services to each Service Area in a timely and professional manner.

2. Effective Date; Term; Renewal

- 2.1. The agreement shall become effective on the day of execution and approval by the Goshen Board of Public Works and Safety and Contractor.
- 2.2. This agreement shall be effective for the 2021 mowing season which shall include 2021 fall clean up.
- 2.3. The agreement may be renewed under the same terms and conditions by written amendment of both parties. Either party may provide the other party notice in writing by December 31 if either party desires to renew the agreement for the next year’s mowing season which shall include fall clean up.

3. Compensation; Payment

- 3.1. City shall pay Contractor for the satisfactory performance of the Lawn Services based on the established price at a Service Area as set forth in Exhibit B attached to this agreement.
- 3.2. Payment for services rendered shall be upon City’s receipt of a detailed invoice from Contractor which may be invoiced no more frequently than monthly for the services performed the previous month.
 - (a) For a Service Area in which the price is based on a lump sum cost for season, the monthly cost shall be equal to one-sixth (1/6) of the established price at a Service Area with six (6) monthly invoices beginning in June and ending in November (for services through the end of the season, including fall clean up).

- (b) The invoice for services provided at **Service Areas 1 through 8, 14 and 15** shall be sent to the following address, or at such other address as City may designate in writing:

City of Goshen
c/o Goshen Engineering Department
204 E. Jefferson Street
Goshen, IN 46528

Email is also acceptable at Engineering@goshencity.com

- (i) The Lump Sum Cost for Season for **Service Areas 1 through 8** is \$16,650.00 (one-sixth of which equals \$2,775.00).
- (ii) The Unit Cost for Each Mow for **Service Area 14** is \$25.00, and the Fall Clean Up Cost is \$40.00.
- (iii) The Unit Cost for Each Mow for **Service Area 15** is \$50.00, and the Fall Clean Up Cost is \$50.00.
- (c) The invoice for services provided at **Service Areas 9 through 13** shall be sent to the following address, or at such other address as City may designate in writing:

City of Goshen
c/o Goshen Redevelopment Commission
204 E. Jefferson Street
Goshen, IN 46528

Email is also acceptable at Redevelopment@goshencity.com

- (i) The Lump Sum Cost for Season for **Service Areas 9 through 11** is \$2,500.00 (one-sixth of which equals \$416.67).
- (ii) The Unit Cost for Each Mow for **Service Area 12** is \$50.00, and the Fall Clean Up Cost is \$100.00.
- (iii) The Unit Cost for Each Mow for **Service Area 13** is \$90.00, and the Fall Clean Up Cost is \$100.00.
- 3.3. Payment will be made within forty-five (45) days following City's receipt of the invoice. If any dispute arises, the undisputed amount will be paid. Payment is deemed to be made on the date of mailing the check.
- 3.4. Contractor is required to have a current W-9 form on file with the Goshen Clerk-Treasurer's Office before City will issue payment.

4. Licensing/Certification Standards

Contractor certifies that Contractor and any subcontractor possesses and agrees to maintain any and all licenses, certifications, or accreditations as required for the Lawn Services provided by Contractor pursuant to this agreement. This shall specifically include the application of any chemicals to eliminate weeds.

5. Independent Contractor

- 5.1. Contractor shall operate as a separate entity and independent contractor of the City of Goshen. Any employees, agents or subcontractors of Contractor shall be under the sole and exclusive direction and control of Contractor and shall not be considered employees, agents or subcontractors of City. City shall not be responsible for injury, including death, to any persons or damages to any property arising out of the acts or omissions of Contractor and/or Contractor's employees, agents or subcontractors.
- 5.2. Contractor understands that City will not carry worker's compensation or any other insurance on Contractor and/or Contractor's employees or subcontractors.
- 5.3. Contractor is solely responsible for compliance with all federal, state and local laws regarding reporting of compensation earned and payment of taxes. City will not withhold federal, state or local income taxes or any other payroll taxes.

6. Non-Discrimination

Contractor and any subcontractors shall not discriminate against any employee or applicant for employment to be employed in the performance of this agreement, with respect to the employee or applicant's hire, tenure, terms, conditions, or privileges of employment or any other matter directly or indirectly related to employment, because of the employee's or applicant's race, religion, color, sex, disability, national origin, or ancestry. Breach of this covenant may be regarded as a material breach of contract.

7. Employment Eligibility Verification

- 7.1. Contractor shall enroll in and verify the work eligibility status of all Contractor's newly hired employees through the E-Verify program as defined in Indiana Code § 22-5-1.7-3. Contractor is not required to participate in the E-Verify program should the program cease to exist. Contractor is not required to participate in the E-Verify program if Contractor is self-employed and does not employ any employees.
- 7.2. Contractor shall not knowingly employ or contract with an unauthorized alien, and Contractor shall not retain an employee or continue to contract with a person that Contractor subsequently learns is an unauthorized alien.
- 7.3. Contractor shall require their subcontractors, who perform work under this agreement, to certify to Contractor that the subcontractor does not knowingly employ or contract with an unauthorized alien and that the subcontractor has enrolled and is participating in the E-Verify program. Contractor agrees to maintain this certification throughout the duration of the term of a contract with a subcontractor.
- 7.4. City may terminate the agreement if Contractor fails to cure a breach of this provision no later than thirty (30) days after being notified by City of a breach.

8. Contracting with Relatives

Pursuant to Indiana Code § 36-1-21, if the Contractor is a relative of a City of Goshen elected official or a business entity that is wholly or partially owned by a relative of a City of Goshen elected official, the Contractor certifies that Contractor has notified both the City of Goshen elected official and the City of Goshen Legal Department of the relationship prior to entering into this agreement.

9. No Investment Activities in Iran

In accordance with Indiana Code § 5-22-16.5, Contractor certifies that Contractor does not engage in investment activities in Iran as defined by Indiana Code § 5-22-16.5-8.

10. Indemnification

Contractor shall indemnify and hold harmless the City of Goshen and City's agents, officers, and employees from and against any and all liability, obligations, claims, actions, causes of action, judgments, liens, damages, penalties, injuries, or accidental deaths caused by any intentional, reckless, or negligent act or omission by Contractor or any of Contractor's agents, officers, and employees during the performance of this agreement. Such indemnity shall include reasonable attorney's fees and other expenses incurred by City, and shall not be limited by reason of insurance coverage required by this agreement.

11. Insurance

- 11.1. Prior to commencing work, Contractor shall furnish City a certificate of insurance in accordance with the following minimum requirements, shall maintain the insurance in full force and effect, and shall keep on deposit at all times during the term of the agreement with City the certificates of proof issued by the insurance carrier that such insurance is in full force and effect. Contractor shall specifically include coverage for the City of Goshen as an additional insured for Employer's Liability, General Liability and Automobile Liability.
- 11.2. Each certificate shall require that written notice be given to the City at least thirty (30) days prior to the cancellation or a material change in the policy.
- 11.3. Contractor shall at least include the following types of insurance with the following minimum limits of liability:
 - (a) Workers Compensation and Employer's Liability - Statutory Limits
 - (b) General Liability - Combined Bodily Injury and Property Damage, \$1,000,000 each occurrence and \$2,000,000 aggregate
 - (c) Automobile Liability - Combined Bodily Injury and Property Damage, \$1,000,000 each occurrence and aggregate
 - (d) Excess Umbrella Coverage - \$1,000,000 each occurrence

12. Force Majeure

- 12.1. Except for payment of sums due, neither party shall be liable to the other or deemed in default under this agreement if and to the extent that such party's performance under this agreement is prevented by reason of force majeure. The term "force majeure" means an occurrence that is beyond the control of the party and could not have been avoided by exercising reasonable diligence. Examples of force majeure are natural disasters or decrees of governmental bodies not the fault of the affected party.
- 12.2. If either party is delayed by force majeure, the party affected shall provide written notice to the other party immediately. The notice shall provide evidence of the force majeure event to the satisfaction of the other party. The party shall do everything possible to resume performance. If the period of non-performance exceeds fifteen (15) calendar days, the party whose ability to perform has not been affected may, by giving written notice, terminate the agreement and the other party shall have no recourse.

13. Default

- 13.1. If Contractor fails to perform the work or comply with the provisions of this agreement, then Contractor may be considered in default.
- 13.2. It shall be mutually agreed that if Contractor fails to perform the work or comply with the provisions of this agreement, City may issue a written notice of default and provide a period of time that shall not be less than seven (7) days in which Contractor shall have the opportunity to cure. If the default is not cured within the time period allowed, the agreement may be terminated by the City. In the event of default and failure to satisfactorily remedy the default after receipt of written notice, the City may otherwise secure similar work in any manner deemed proper by the City, and Contractor shall be liable to the City for any excess costs incurred.
- 13.3. Contractor may also be considered in default by the City if any of the following occur:
 - (a) There is a substantive breach by Contractor of any obligation or duty owed under the provisions of this agreement.
 - (b) Contractor is adjudged bankrupt or makes an assignment for the benefit of creditors.
 - (c) Contractor becomes insolvent or in an unsound financial condition so as to endanger performance under the agreement.
 - (d) Contractor becomes the subject of any proceeding under law relating to bankruptcy, insolvency or reorganization, or relief from creditors and/or debtors.
 - (e) A receiver, trustee, or similar official is appointed for Contractor or any of Contractor's property.
 - (f) Contractor is determined to be in violation of federal, state, or local laws or regulations and that such determination renders Contractor unable to perform the work described under these Specification Documents.
 - (g) The agreement or any right, monies or claims are assigned by Contractor without the consent of the City.

14. Termination

- 14.1. The agreement may be terminated in whole or in part, at any time, by mutual written consent of both parties. Contractor shall be paid for all work satisfactorily performed and expenses reasonably incurred prior to notice of termination.
- 14.2. City may terminate this agreement, in whole or in part, in the event of default by Contractor.
- 14.3. The rights and remedies of the parties under this section shall not be exclusive and are in addition to any other rights and remedies provided by law or under this agreement.

15. Notice

Any notice required or desired to be given under this agreement shall be deemed sufficient if it is made in writing and delivered personally or sent by regular first-class mail to the parties at the following addresses, or at such other place as either party may designate in writing from time to time. Notice will be considered given three (3) days after the notice is deposited in the US mail or when received at the appropriate address.

Address for City: City of Goshen, Indiana
Attention: Goshen Legal Department
204 East Jefferson Street, Suite 2
Goshen, IN 46528

Address for Contractor: Colin Avila dba Yardshark
PO Box 2101
Michigan City, IN 46361

16. Subcontracting or Assignment of Agreement

- 16.1. Except for providing weed treatment services, Contractor shall not subcontract or assign any right or interest under the agreement, including the right to payment, without having prior written approval from City. Any attempt by Contractor to subcontract or assign any portion of the agreement shall not be construed to relieve Contractor from any responsibility to fulfill all contractual obligations.
- 16.2. Contractor may subcontract with a licensed entity or individual to provide weed treatment services.

17. Amendments

Any modification or amendment to the terms and conditions of the agreement, shall not be binding unless made in writing and signed by both parties. Any verbal representations or modifications concerning the agreement shall be of no force and effect.

18. Waiver of Rights

No right conferred on either party under this agreement shall be deemed waived and no breach of this agreement excused unless such waiver or excuse shall be in writing and signed by the party claimed to have waived such right.

19. Applicable Laws

- 19.1. Contractor agrees to comply with all applicable federal, state, and local laws, rules, regulations and ordinances, and all contractual provisions required to be included in this agreement are incorporated by reference.
- 19.2. Contractor agrees to obtain and maintain all required permits, licenses, registrations, and approvals, and shall comply with all health, safety, and environmental rules or regulations in the performance of the services. Failure to do so maybe deemed a material breach of contract.

20. Miscellaneous

- 20.1. Any provision of this agreement or incorporated documents shall be interpreted in such a way that they are consistent with all provisions required by law to be inserted into the agreement.
- 20.2. In the event of a conflict between these documents and applicable laws, rules, regulations or ordinances, the most stringent or legally binding requirement shall govern.
- 20.3. This agreement shall be construed in accordance with and governed by the laws of the State of Indiana and any suit must be brought in a court of competent jurisdiction in Elkhart County, Indiana.

20.4. In the event legal action is brought to enforce or interpret the terms and conditions of this agreement, the prevailing party of such action shall be entitled to recover all costs of that action, including reasonable attorneys' fees.

21. Severability

In the event that any provision of the agreement is found to be invalid or unenforceable, then such provision shall be reformed in accordance with applicable law. The invalidity or unenforceability of any provision of the agreement shall not affect the validity or enforceability of any other provision of the agreement.

22. Binding Effect

All provisions, covenants, terms and conditions of this agreement apply to and bind the parties and their legal heirs, representatives, successors and assigns.

23. Entire Agreement

This agreement constitutes the entire agreement between the parties and supersedes all other agreements or understandings between City and Contractor.

24. Authority to Execute

The undersigned affirm that all steps have been taken to authorize execution of this agreement, and upon the undersigned's execution, bind their respective organizations to the terms of the agreement.

IN WITNESS WHEREOF, the parties have executed this agreement on the dates as set forth below.

City of Goshen, Indiana

Goshen Board of Public Works and Safety

Colin Avila d/b/a Yardshark

Jeremy P. Stutsman, Mayor

Colin Avila, Owner

Michael A. Landis, Member

Date Signed: _____

Mary Nichols, Member

Date Signed: _____

Goshen Redevelopment Commission

Mark Brinson
Community Development Director

Date Signed: _____

EXHIBIT A

SPECIFICATIONS

FOR

CITY OF GOSHEN LAWN SERVICES

1. These specifications are for lawn mowing and maintenance services (“Lawn Services”) for certain City of Goshen properties as listed on the proposal form and depicted on the attached aerial maps. Each area depicted is referred to as a “Service Area.” Paragraphs 3 through 17 shall apply to each Service Area, and paragraph 18 identifies additional requirements or information for the Lawn Services to be provided to a specific Service Area.
2. Proposal Basis
 - a. City shall pay Contractor for the performance of the Lawn Services based on an established price for the Service Area. Proposals are requested based on:
 - i. Lump Sum Cost for Season. Contractor’s proposal to provide Lawn Services at a Service Area shall be based on a lump sum cost for the entire season, and shall include fall clean up.
 - ii. Unit Cost for Each Mow. Due to a pending sale of a Service Area or an upcoming construction project that may affect a Service Area, Contractor’s proposal to provide Lawn Services at a Service Area shall be based on an established unit cost for each time the Service Area is mowed. In addition, proposals are requested based on a unit cost for fall clean up at the Service Area.
3. Contractor shall provide all labor, equipment, materials, tools, insurance, supervision, and all other items necessary to provide the Lawn Services to each Service Area in a timely and professional manner. Such Lawn Services include mowing turf areas, trimming, proper removal and disposal of lawn litter and debris, including, but not limited to trash, sticks, and grass clippings, and fall leaf clean up services.
4. At the beginning of each season, and before each mowing, Contractor shall collect, remove and properly dispose of debris from each Service Area.
5. Contractor shall regularly inspect each Service Area during the growing season which extends from approximately the first week of May through the last week of October. The frequency of Lawn Services to be provided may vary depending on lawn treatments, irrigation, rainfall and/or drought.
6. Contractor shall mow a Service Area as needed so that grass does not exceed a height of five and one-half inches (5.5”). Contractor shall cut the turf area to a finished height of not less than two and one-half inches (2.5”).
7. Contractor shall mow the entire Service Area, including the any turf area extending to a walkway, curb and/or the edge of pavement that is adjacent to the Service Area.
8. Contractor may leave grass clippings on the lawn as long as the mulched grass clippings are evenly dispersed and no visible clumps or rows remain after mowing the turf area. Contractor shall otherwise remove and properly dispose of grass clippings, if visible, after mowing the turf area.

9. Contractor shall also trim grass around fixed objects with each cutting to a height no greater than the surrounding turf area. This will include, but not limited to turf areas adjacent to objects such as trees, shrubs, landscaping areas, sign posts, light posts, buildings, fences, walkways, and pavement edges. Contractor shall use extreme care to prevent damage or injury to fixed objects.
10. Contractor shall mow and trim in such a manner as to keep grass clippings off vehicles and to avoid and/or minimize throwing grass clipping and trimmings on walkways, streets, parking areas, driveways, and landscaping areas. Contractor shall remove and properly dispose of all grass clippings and trimmings that may be thrown upon walkways, streets, parking areas, driveways and landscaping areas. Contractor shall NOT blow grass clippings, trimmings, lawn litter or debris into the storm drains.
11. Contractor shall remove and properly dispose of all lawn litter and debris at Contractor's expense. Contractor shall not dispose of lawn debris in City's solid waste containers.
12. All elements of the Lawn Services at a Service Area shall be completed the same day in which the Lawn Services are started. No partial mowing will be allowed unless the weather forces delay. If rain or wet turf conditions exist, Contractor shall finish the Lawn Services as soon as favorable conditions return.
13. Contractor shall provide fall clean up services for each Service Area as needed which shall include raking, blowing or otherwise preparing the leaves for collection and disposal by the City's Street Department. The fall clean up shall take place in late October/early November after most of the leaves have fallen from the trees so that there will be minimal leaves on the grounds of the Service Area over the winter months. Fallen leaves shall be placed at a location near the street to be collected by the Street Department during the leaf collection program. Contractor shall ensure that no twigs or branches are in the leaves that are placed for collection by the Street Department.
14. Contractor shall perform the Lawn Services Monday through Saturday between the hours of 7:00 a.m. and 7:00 p.m. (local time). Contractor shall not perform Lawn Services on Sunday or on a holiday (i.e., Memorial Day, Independence Day, or Labor Day).
15. Contractor shall maintain all equipment in proper operating condition to provide a high-quality cut and minimize turf damage, the leaking of fluids, noise pollution and air pollution.
16. Contractor and Contractor's employees shall maintain a professional appearance while performing Lawn Services. The wearing of tank tops or halter tops shall not be permitted. Contractor and Contractor's employees conduct shall be professional and courteous at all times, and shall not use loud or profane language.
17. Contractor shall take all necessary precautions to avoid damaging any property during the performance of Lawn Services. Any damage caused to any property by Contractor shall be reported to the City immediately. Contractor shall repair or replace at Contractor's expense any property damaged while performing Lawn Services.
18. Additional Requirements/Information for a Specific Service Area
 - a. Service Area 1 - Third Street/Madison Street from Main Street to Pike Street
 - i. Service Area 1 includes the grass areas within the boulevard (center islands) extending from Main Street to Pike Street; the grass area at the "inside" curve of South Third Street and West Madison Street located west of the north/south alley; and the grass areas at the public parking lot at the southwest corner of South Third Street and West Washington Street.

- ii. Contractor shall perform application of weed control as needed throughout the season to eliminate weeds (i.e. crabgrass, dandelions, etc.). Contractor shall perform weed control in accordance with industry standards and manufacturer instructions.
 - iii. Contractor shall insure that all chemical applications are performed by properly licensed/certified individuals.
- b. Service Area 4 - East Lincoln Avenue Stormwater Basin
- i. Contractor shall mow the turf areas to the north and west of the stormwater basin as needed.
 - ii. Contractor shall mow the turf area around the top of the stormwater basin as needed.
 - iii. Contractor shall NOT mow the bottom of the stormwater basin.
 - iv. Contractor shall mow the interior side slopes, the east exterior side slope, west exterior side slope, and the south side of the stormwater basin to the ground level, mulch, and leave clippings in place to decompose over time either in late fall or late winter/early spring when the ground is hard enough to avoid creating ruts.
- c. Service Area 6 – East Kercher Road Stormwater Basin
- i. Contractor shall mow the turf area surrounding the stormwater basin as needed.

19. Addition or Removal of Service Area

- a. City reserves the right to add or remove a Service Area from the locations to be provided Lawn Services. City shall give Contractor notice of the addition or removal of a Service Area and the effective date of the change.
 - b. In the event a new Service Area is added to the agreement, City and Contractor shall negotiate a price to provide Lawn Services to the new Service Area which shall be based on either a lump sum cost for the remainder of the season, including fall clean up, or a unit cost for each mow and a unit cost for fall clean up. Any addition of a Service Area to the agreement shall be made in writing and signed by both parties.
 - c. In the event a Service Area is removed from the agreement, the removal of a Service Area in which the cost of the Lawn Services is based on a lump sum cost shall be made in writing with a cost adjustment to reflect the value of the change and signed by both parties. Any removal of a Service Area in which the cost is based on a unit cost for each mow may be removed from the agreement based solely on the City's written notice to Contractor.
- d. Service Areas based on a Unit Cost for Mow and Fall Clean Up
- i. City will give Contractor notice of when the Contractor shall begin or discontinue Lawn Services to a Service Areas which is based on a Unit Cost for Mow and Fall Clean-up.

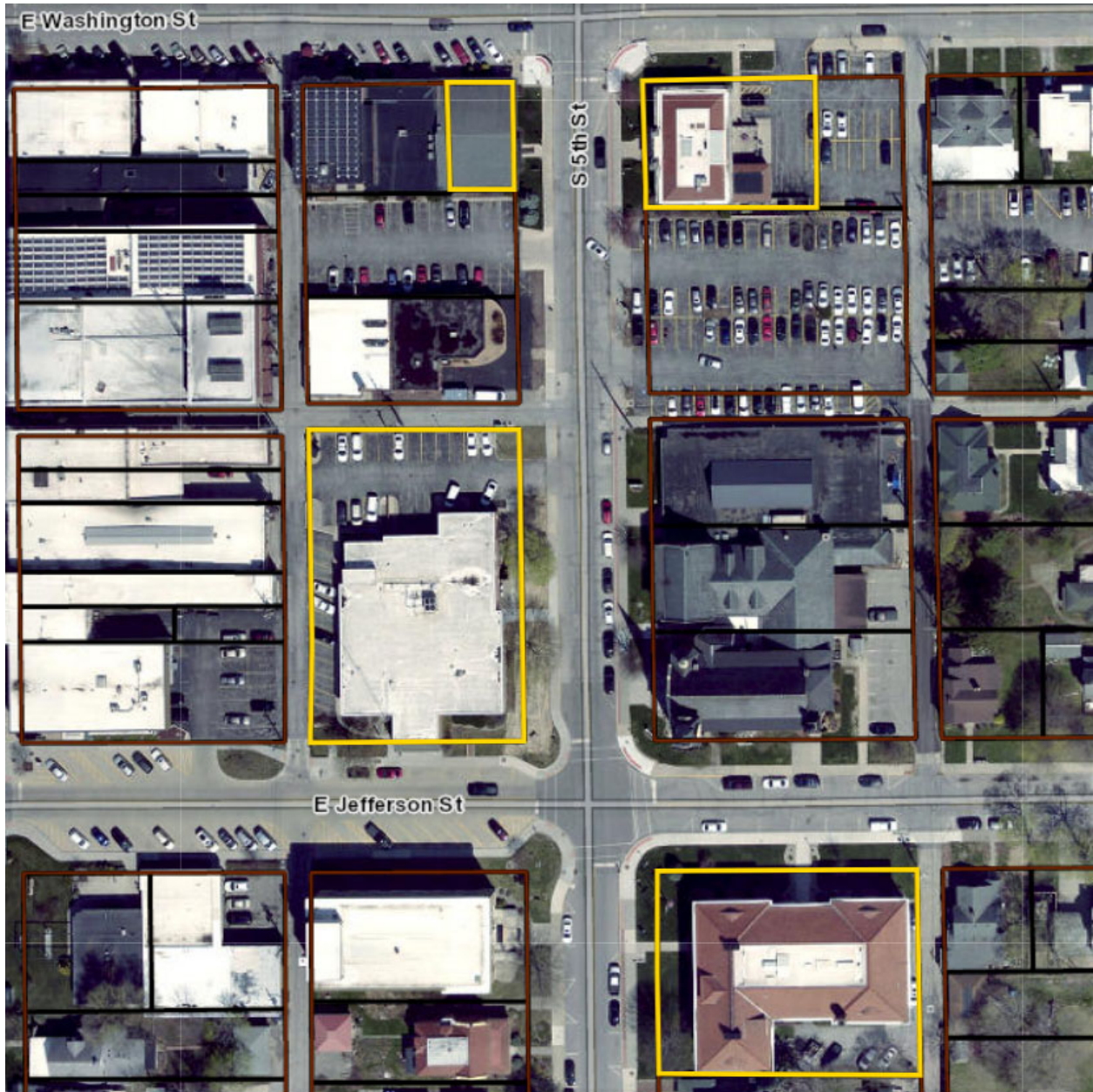
SERVICE AREA 1

THIRD STREET/MADISON STREET FROM MAIN STREET TO PIKE STREET



SERVICE AREA 2

**CITY BUILDINGS AT
202 SOUTH FIFTH STREET,
203 SOUTH FIFTH STREET,
111 EAST JEFFERSON STREET, AND
204 EAST JEFFERSON STREET**



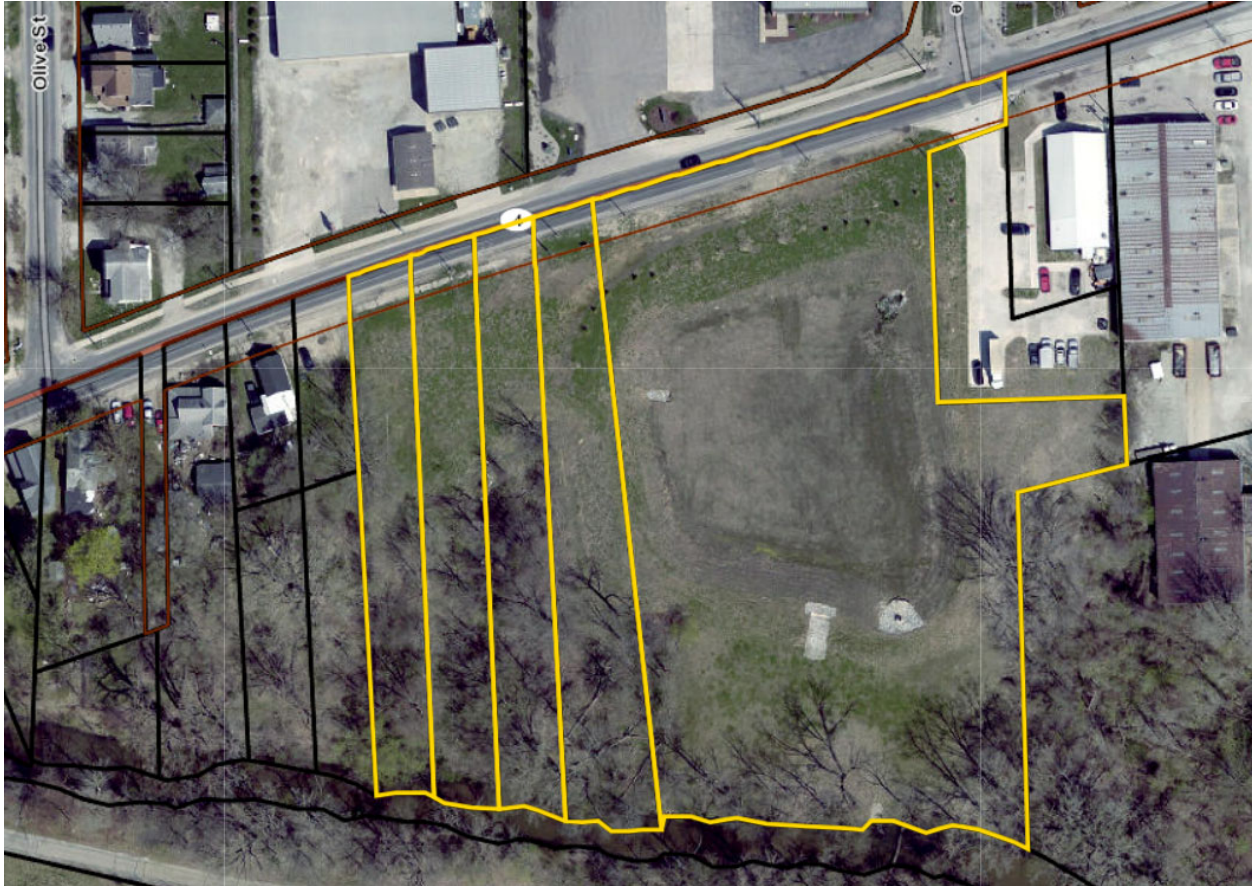
SERVICE AREA 3

**GOSHEN POLICE TRAINING FACILITY
AT 713 EAST LINCOLN AVENUE**



SERVICE AREA 4

EAST LINCOLN AVENUE STORMWATER BASIN



SERVICE AREA 5

300-BLOCK EAST WILDEN AVENUE



SERVICE AREA 6

EAST KERCHER ROAD STORMWATER BASIN



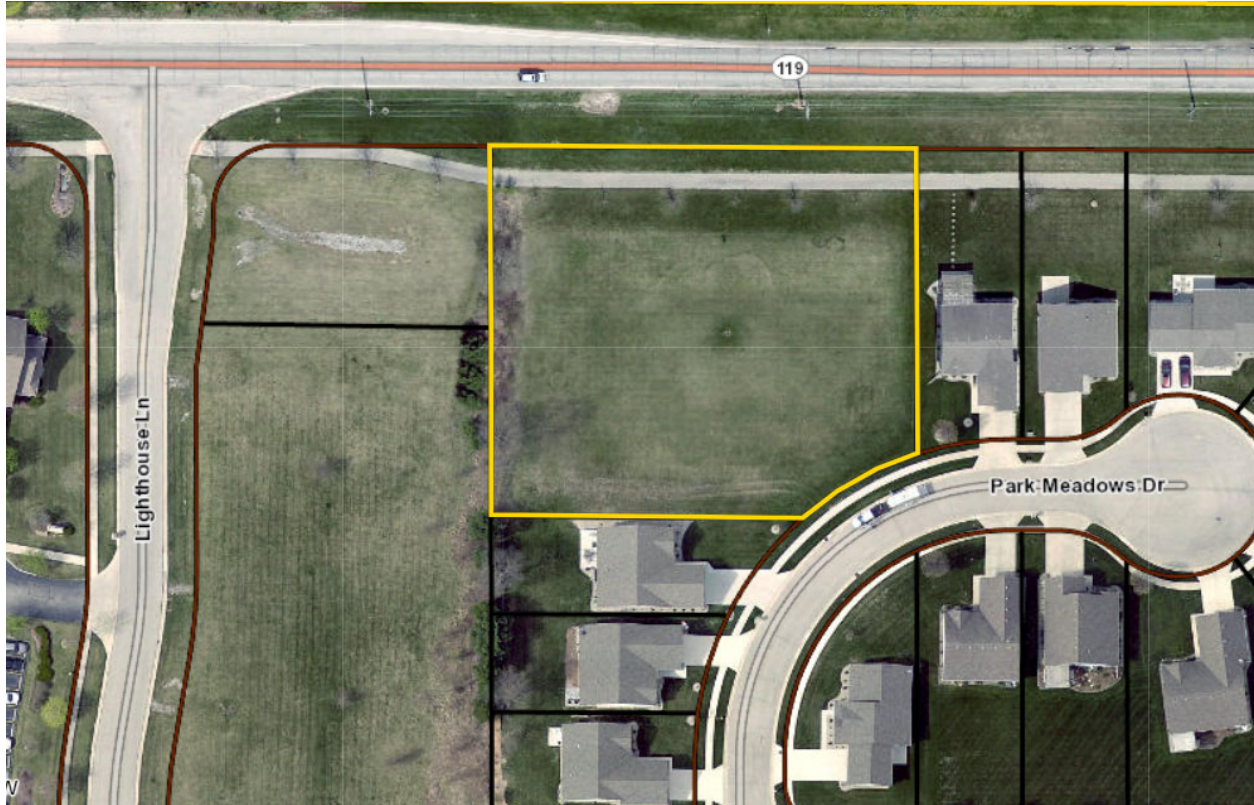
SERVICE AREA 7

SOUTHEAST CORNER OF EAST KERCHER ROAD AND PINE MANOR AVENUE



SERVICE AREA 8

WEST PLYMOUTH AVENUE STORMWATER BASIN

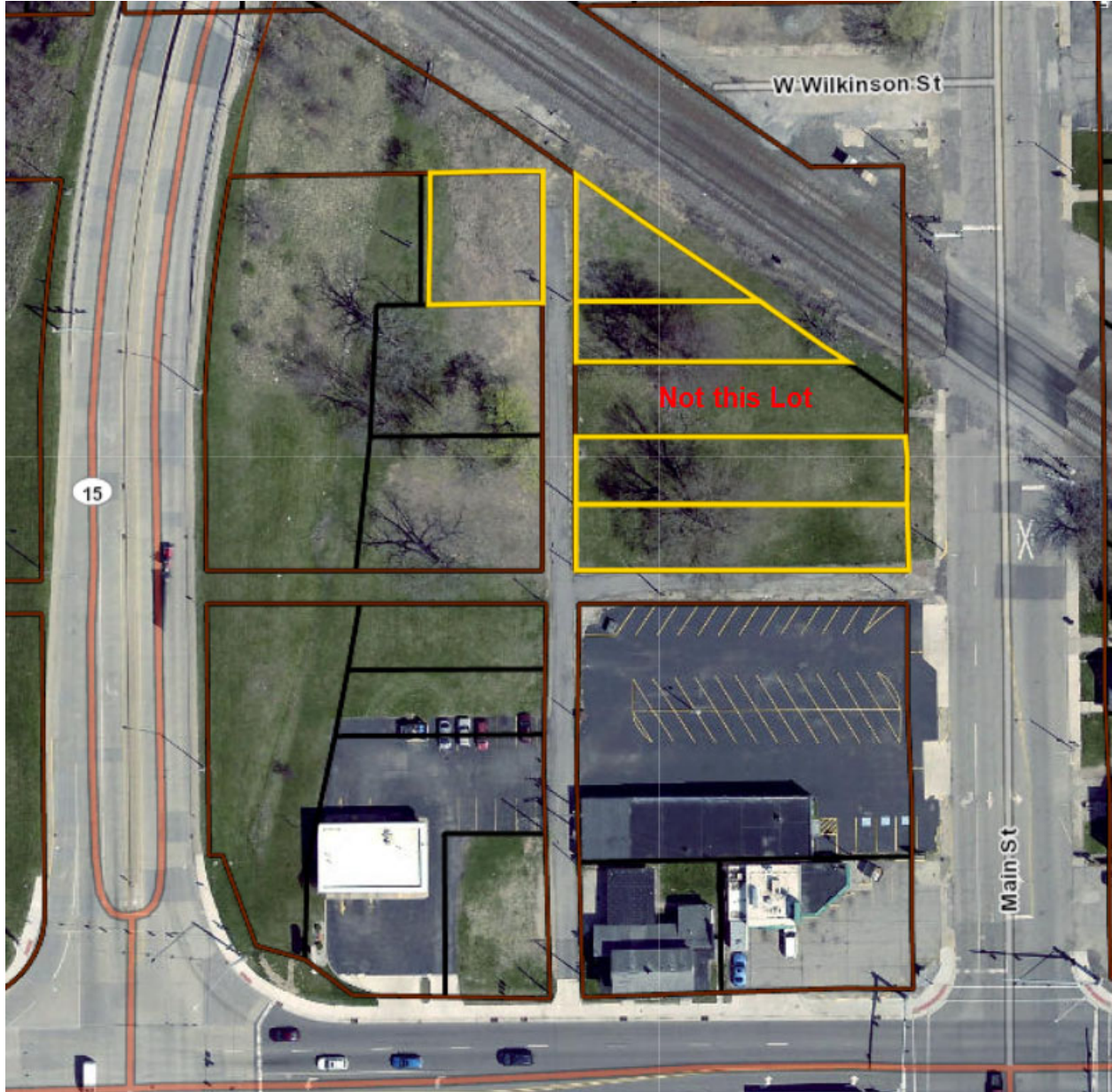


SERVICE AREA 9
305 EAST KERCHER ROAD



SERVICE AREA 10

300-BLOCK NORTH MAIN STREET



SERVICE AREA 11

400-BLOCK SOUTH THIRD STREET



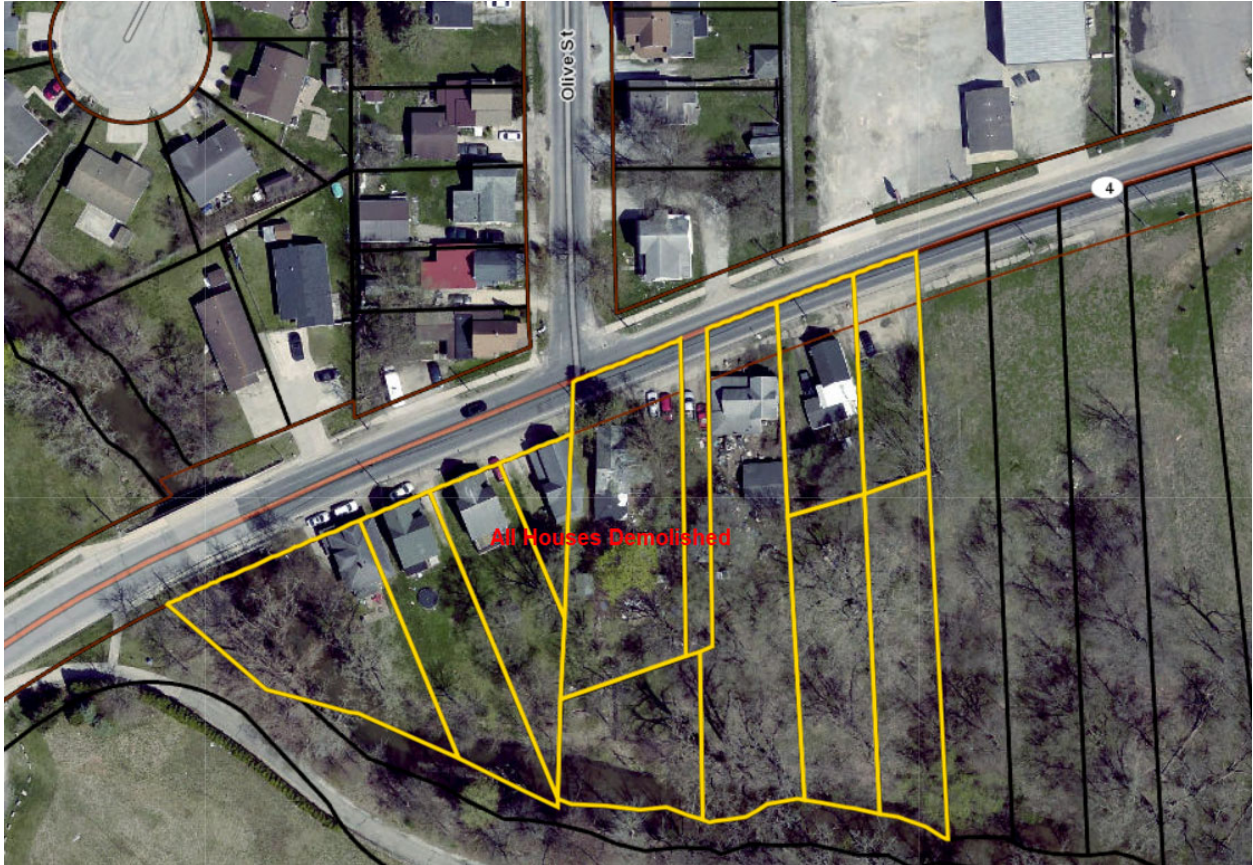
SERVICE AREA 12

217 WEST WILDEN AVENUE



SERVICE AREA 13

600-700-BLOCKS EAST LINCOLN AVENUE



SERVICE AREA 14

**NORTHEAST CORNER OF EAST LINCOLN AVENUE
AND OLIVE STREET**



SERVICE AREA 15

901 NORTH MAIN STREET

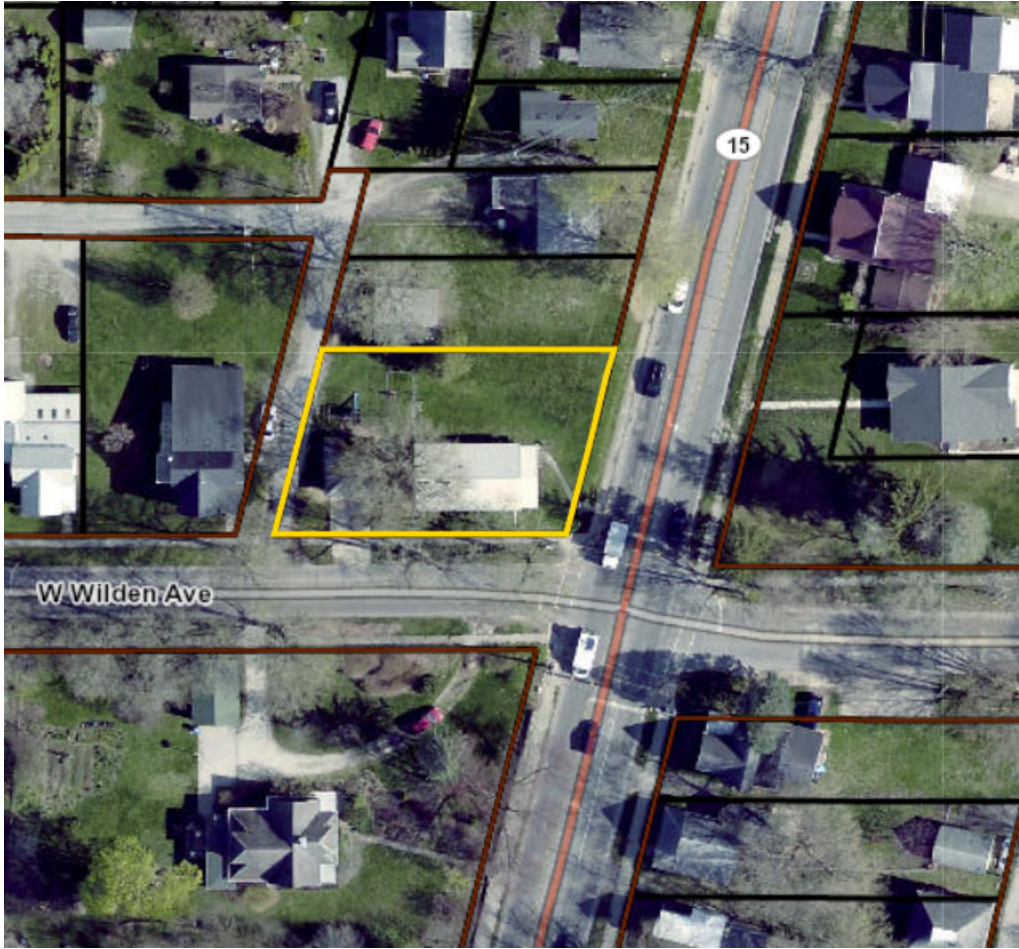


EXHIBIT B - Colin Avila dba Yardshark

LOCATION		BASIS	COST
Service Area 1	Third Street/Madison Street from Main Street to Pike Street (includes Weed Control)	Lump Sum Cost for Season:	\$ <u>6000</u>
Service Area 2	City Buildings at 202 South Fifth Street, 203 South Fifth Street, 111 East Jefferson Street, and 204 East Jefferson Street	Lump Sum Cost for Season:	\$ <u>4000</u>
Service Area 3	Goshen Police Training Facility at 713 East Lincoln Avenue	Lump Sum Cost for Season:	\$ <u>400</u>
Service Area 4	East Lincoln Avenue Stormwater Basin	Lump Sum Cost for Season:	\$ <u>1500</u>
Service Area 5	300-Block East Wilden Avenue	Lump Sum Cost for Season:	\$ <u>2100</u>
Service Area 6	East Kercher Road Stormwater Basin	Lump Sum Cost for Season:	\$ <u>1400</u>
Service Area 7	Southeast Corner of East Kercher Road and Pine Manor Avenue	Lump Sum Cost for Season:	\$ <u>250</u>
Service Area 8	West Plymouth Avenue Stormwater Basin	Lump Sum Cost for Season:	\$ <u>1000</u>
Service Area 9	305 East Kercher Road	Lump Sum Cost for Season:	\$ <u>500</u>
Service Area 10	300-Block North Main Street	Lump Sum Cost for Season:	\$ <u>1000</u>
Service Area 11	400-Block South Third Street	Lump Sum Cost for Season:	\$ <u>1000</u>

LOCATION	BASIS	COST
Service Area 12 217 West Wilden Avenue	Unit Cost for Each Mow:	\$ <u>50</u>
Service Area 12 217 West Wilden Avenue	Fall Clean Up:	\$ <u>100</u>
Service Area 13 600-700 Blocks East Lincoln Avenue	Unit Cost for Each Mow:	\$ <u>90</u>
Service Area 13 600-700 Blocks East Lincoln Avenue	Fall Clean Up:	\$ <u>100</u>
Service Area 14 Northeast Corner of East Lincoln Avenue and Olive Street	Unit Cost for Each Mow:	\$ <u>25</u>
Service Area 14 Northeast Corner of East Lincoln Avenue and Olive Street	Fall Clean Up:	\$ <u>40</u>
Service Area 15 901 North Main Street	Unit Cost for Each Mow:	\$ <u>50</u>
Service Area 15 901 North Main Street	Fall Clean Up:	\$ <u>50</u>



**Engineering Department
CITY OF GOSHEN**

204 East Jefferson Street, Suite 1 • Goshen, IN 46528-3405

Phone (574) 534-2201 • Fax (574) 533-8626 • TDD (574) 534-3185
engineering@goshencity.com • www.goshenindiana.org

MEMORANDUM

TO: Board of Works and Safety and Stormwater Board

FROM: Dustin Sailor, P.E., Director of Public Works

RE: **DOWNTOWN MAIN STREET STREETScape –
ENTRY ARCH EVALUATION & DESIGN (JN: 2016-0038)**

DATE: April 26, 2021

The City of Goshen and the Downtown Economic Improvement District have solicited proposals for the conceptualization and design of two entry arches to be placed at the north and south end of Main Street between Pike Street and Madison Street.

Proposals were solicited from multiple design firms and two proposals were received. JPR, of Elkhart, provided the most responsive proposal for the lowest professional service fee. Goshen Engineering requests the Board approve the time and materials agreement with JPR in a not to exceed amount of \$30,000.00.

Requested Motion: Move to award the evaluation and design of the downtown Main Street arches to JPR for a time and materials not to exceed amount of \$30,000.00.

AGREEMENT
Downtown Mainstreet Arch Design

THIS AGREEMENT is entered into on _____, 2021, which is the last signature date set forth below, by and between **Jones Petrie Rafinski** (“Contractor”), whose mailing address is 300 Nibco Parkway, Ste 250, Elkhart, IN 46516 and **City of Goshen, Indiana**, a municipal corporation and political subdivision of the State of Indiana acting through the Goshen Board of Public Works and Safety and Stormwater Board (“City”).

In consideration of the terms, conditions and mutual covenants contained in this agreement, the parties agree as follows:

Contractor Duties

Contractor shall provide City services for the design of the Mainstreet Arches, which services are more particularly described in Contractor’s March 9, 2021 proposal attached as Exhibit A (hereinafter referred to as “Duties”).

In the event of any conflict between the terms of this agreement and the terms contained in the proposal attached as Exhibit A, the terms set forth in this agreement shall prevail.

- (A) Contractor will perform and provide a topographic survey to facilitate a full and accurate design.
- (B) Contractor will perform and provide a geotechnical report to analyze the existing soil conditions and verify their suitability, along with amendment recommendations to ensure the structures can be supported.
- (C) Contractor will review the preliminary concept design along with a range of precedence study gateway structures to facilitate a broad range of ideas and options.
- (D) Contractor will develop work plans for rerouting and resolving utility conflicts during the schematic design stage.
- (E) Contractor will perform and provide a detailed structural analysis to appropriately size the foundations, columns, and cross members required to support the span. Impacts to the right of way, vertical height requirements, sight distance analysis, pedestrian and vehicular circulation and safety will be analyzed.
- (F) Contractor will develop working drawings and technical specifications to construct the work and an estimate of final construction costs will be developed.
- (G) Contractor will assist the City in the bidding and negotiation phase of the project.
- (H) Contractor will conduct periodic reviews (minimum of two (2) visits per month) of construction to ensure the Contractor(s) is providing the level of quality that is required for the project.

Effective Date; Term

- (A) The agreement shall become effective on the day of execution and approval by both parties.

- (B) Contractor acknowledges that time is of the essence and that the timely performance of its Duties is an important element of this agreement. Contractor shall perform all Duties as expeditiously as is consistent with professional skill and care in the orderly progress of the Duties. Design work shall be completed on or before August 6, 2021. Construction phase work will only be conducted after the City provides Contractor with a notice to proceed.

Payment

- (A) City shall pay Contractor for each phase of Duties satisfactorily completed under this agreement as Duties progress.
- (B) City will compensate Contractor for time and expenses based on the standard hourly rates, but in no event will the total compensation for all services exceed Thirty Thousand Dollars (\$30,000.00)
- (C) Payment shall be upon City's receipt of a detailed invoice from Contractor. The invoice shall be sent to the following address, or at such other address as City may designate in writing.

City of Goshen
c/o Goshen Engineering Department
204 East Jefferson Street, Suite 1
Goshen, IN 46528

- (D) Payment will be made within forty-five (45) days following City's receipt of the invoice. If any dispute arises, the undisputed amount will be paid. Payment is deemed to be made on the date of mailing the check.
- (E) Contractor is required to have a current W-9 form on file with the Goshen Clerk-Treasurer's Office before City will issue payment.

Ownership of Documents

All documents, records, applications, plans, drawings, specifications, reports, and other materials, regardless of the medium in which they are fixed, (collectively "Documents") prepared by Contractor or Contractor's employees, agents or subcontractors under this agreement, shall become and remain the property of and may be used by City. Contractor may retain a copy of the Documents for its records, including electronic files, as instruments of professional service. Nevertheless, the final documents prepared under this agreement shall become the property of City upon completion of the services and payment in full of all monies due to Contractor.

Licensing/Certification Standards

Contractor certifies that Contractor possesses and agrees to maintain any and all licenses, certifications, or accreditations as required for the services provided by Contractor pursuant to this agreement.

Independent Contractor

- (A) Contractor shall operate as a separate entity and independent contractor of the City of Goshen. Any employees, agents or subcontractors of Contractor shall be under the sole and exclusive direction and control of Contractor and shall not be considered employees, agents or subcontractors of City. City shall not be responsible for injury, including death,

to any persons or damages to any property arising out of the acts or omissions of Contractor and/or Contractor's employees, agents or subcontractors.

- (B) Contractor understands that City will not carry worker's compensation or any other insurance on Contractor and/or Contractor's employees or subcontractors. Prior to commencing work under this agreement, and if Contractor utilizes employees or subcontractors to perform work under this agreement, Contractor agrees to provide City a certificate(s) of insurance showing Contractor's and any subcontractor's compliance with workers' compensation statutory requirements.
- (C) Contractor is solely responsible for compliance with all federal, state and local laws regarding reporting of compensation earned and payment of taxes. City will not withhold federal, state or local income taxes or any other payroll taxes.

Non-Discrimination

Contractor agrees to comply with all federal and Indiana civil rights laws, including, but not limited to Indiana Code 22-9-1-10. Contractor or any subcontractors, or any other person acting on behalf of Contractor or a subcontractor, shall not discriminate against any employee or applicant for employment to be employed in the performance of this agreement, with respect to the employee's hire, tenure, terms, conditions, or privileges of employment or any other matter directly or indirectly related to employment, because of the employee's or applicant's race, religion, color, sex, disability, national origin, or ancestry. Breach of this covenant may be regarded as a material breach of contract.

Employment Eligibility Verification

- (A) Contractor shall enroll in and verify the work eligibility status of all Contractor's newly hired employees through the E-Verify program as defined in Indiana Code § 22-5-1.7-3. Contractor is not required to participate in the E-Verify program should the program cease to exist. Contractor is not required to participate in the E-Verify program if Contractor is self-employed and does not employ any employees.
- (B) Contractor shall not knowingly employ or contract with an unauthorized alien, and contractor shall not retain an employee or continue to contract with a person that the Contractor subsequently learns is an unauthorized alien.
- (C) Contractor shall require their subcontractors, who perform work under this contract, to certify to the Contractor that the subcontractor does not knowingly employ or contract with an unauthorized alien and that the subcontractor has enrolled and is participating in the E-Verify program. Contractor agrees to maintain this certification throughout the duration of the term of a contract with a subcontractor.
- (D) City may terminate the contract if Contractor fails to cure a breach of this provision no later than thirty (30) days after being notified by City of a breach.

Contracting with Relatives

Pursuant to Indiana Code § 36-1-21, if the Contractor is a relative of a City of Goshen elected official or a business entity that is wholly or partially owned by a relative of a City of Goshen

elected official, the Contractor certifies that Contractor has notified both the City of Goshen elected official and the City of Goshen Legal Department of the relationship prior to entering into this agreement.

No Investment Activities in Iran

In accordance with Indiana Code § 5-22-16.5, Contractor certifies that Contractor does not engage in investment activities in Iran as defined by Indiana Code § 5-22-16.5-8.

Indemnification

Contractor shall indemnify and hold harmless the City of Goshen and City's agents, officers, and employees from and against any and all liability, obligations, claims, actions, causes of action, judgments, liens, damages, penalties or injuries arising out of any intentional, reckless or negligent act or omission by Contractor or any of Contractor's agents, officers and employees during the performance of services under this agreement. Such indemnity shall include reasonable attorney's fees and all reasonable litigation costs and other expenses incurred by City only if Contractor is determined liable to the City for any intentional, reckless or negligent act or omission in a judicial proceeding, and shall not be limited by the amount of insurance coverage required under this agreement.

Insurance

- (A) Prior to commencing work, the Contractor shall furnish City a certificate of insurance in accordance with the following minimum requirements, shall maintain the insurance in full force and effect, and shall keep on deposit at all times during the term of the contract with City the certificates of proof issued by the insurance carrier that such insurance is in full force and effect. Contractor shall specifically include coverage for the City of Goshen as an additional insured for Employer's Liability, General Liability and Automobile Liability.
- (B) Each certificate shall require that written notice be given to the City at least thirty (30) days prior to the cancellation or a material change in the policy.
- (C) Contractor shall at least include the following types of insurance with the following minimum limits of liability:
 - (1) Workers Compensation and Employer's Liability - Statutory Limits
 - (2) General Liability - Combined Bodily Injury and Property Damage, \$1,000,000 each occurrence and aggregate
 - (3) Automobile Liability - Combined Bodily Injury and Property Damage, \$1,000,000 each occurrence and aggregate
 - (4) Excess Umbrella Coverage - \$1,000,000 each occurrence

Force Majeure

- (A) Except for payment of sums due, neither party shall be liable to the other or deemed in default under this contract if and to the extent that such party's performance under this contract is prevented by reason of force majeure. The term "force majeure" means an occurrence that is beyond the control of the party and could not have been avoided by

exercising reasonable diligence. Examples of force majeure are natural disasters or decrees of governmental bodies not the fault of the affected party.

- (B) If either party is delayed by force majeure, the party affected shall provide written notice to the other party immediately. The notice shall provide evidence of the force majeure event to the satisfaction of the other party. The party shall do everything possible to resume performance. If the period of non-performance exceeds thirty (30) calendar days, the party whose ability to perform has not been affected may, by giving written notice, terminate the contract and the other party shall have no recourse.

Default

- (A) If Contractor fails to perform the services or comply with the provisions of this agreement, then Contractor may be considered in default.
- (B) It shall be mutually agreed that if Contractor fails to perform the services or comply with the provisions of this contract, City may issue a written notice of default and provide a period of time that shall not be less than fifteen (15) days in which Contractor shall have the opportunity to cure. If the default is not cured within the time period allowed, the contract may be terminated by the City. In the event of default and failure to satisfactorily remedy the default after receipt of written notice, the City may otherwise secure similar services in any manner deemed proper by the City, and Contractor shall be liable to the City for any excess costs incurred
- (C) Contractor may also be considered in default by the City if any of the following occur:
 - (1) There is a substantive breach by Contractor of any obligation or duty owed under the provisions of this contract.
 - (2) Contractor is adjudged bankrupt or makes an assignment for the benefit of creditors.
 - (3) Contractor becomes insolvent or in an unsound financial condition so as to endanger performance under the contract.
 - (4) Contractor becomes the subject of any proceeding under law relating to bankruptcy, insolvency or reorganization, or relief from creditors and/or debtors.
 - (5) A receiver, trustee, or similar official is appointed for Contractor or any of Contractor's property.
 - (6) Contractor is determined to be in violation of federal, state, or local laws or regulations and that such determination renders Contractor unable to perform the services described under these Specification Documents.
 - (7) The contract or any right, monies or claims are assigned by Contractor without the consent of the City.

Termination

- (A) The agreement may be terminated in whole or in part, at any time, by mutual written consent of both parties. Contractor shall be paid for all services performed and expenses reasonably incurred prior to notice of termination.
- (B) City may terminate this agreement, in whole or in part, in the event of default by Contractor.
- (C) The rights and remedies of the parties under this section shall not be exclusive and are in addition to any other rights and remedies provided by law or under this agreement.

Notice

Any notice required or desired to be given under this agreement shall be deemed sufficient if it is made in writing and delivered personally or sent by regular first-class mail to the parties at the following addresses, or at such other place as either party may designate in writing from time to time. Notice will be considered given three (3) days after the notice is deposited in the US mail or when received at the appropriate address.

City: City of Goshen, Indiana
Attention: Goshen Legal Department
204 East Jefferson St., Suite 2
Goshen, IN 46528

Contractor: Jones Petrie Rafinski
300 Nibco Parkway, Ste 250
Elkhart, IN 46516

Subcontracting or Assignment

Contractor shall not subcontract or assign any right or interest under the agreement, including the right to payment, without having prior written approval from City. Any attempt by Contractor to subcontract or assign any portion of the agreement shall not be construed to relieve Contractor from any responsibility to fulfill all contractual obligations.

Amendments

Any modification or amendment to the terms and conditions of the agreement shall not be binding unless made in writing and signed by both parties. Any verbal representations or modifications concerning the agreement shall be of no force and effect.

Waiver of Rights

No right conferred on either party under this agreement shall be deemed waived and no breach of this agreement excused unless such waiver or excuse shall be in writing and signed by the party claimed to have waived such right.

Applicable Laws

- (A) Contractor agrees to comply with all applicable federal, state, and local laws, rules, regulations, or ordinances. All contractual provisions legally required to be included are incorporated by reference.
- (B) Contractor agrees to obtain and maintain all required permits, licenses, registrations, and approvals, and shall comply with all health, safety, and environmental rules or regulations in the performance of the services. Failure to do so maybe deemed a material breach of agreement.

Miscellaneous

- (A) Any provision of this agreement or incorporated documents shall be interpreted in such a way that they are consistent with all provisions required by law to be inserted into the agreement. In the event of a conflict between these documents and applicable laws, rules, regulations or ordinances, the most stringent or legally binding requirement shall govern.
- (B) This agreement shall be construed in accordance with and governed by the laws of the State of Indiana and any suit must be brought in a court of competent jurisdiction in Elkhart County, Indiana.
- (C) In the event legal action is brought to enforce or interpret the terms and conditions of these agreement, the prevailing party of such action shall be entitled to recover all costs of that action, including reasonable attorneys' fees.

Severability

In the event that any provision of the agreement is found to be invalid or unenforceable, then such provision shall be reformed in accordance with applicable law. The invalidity or unenforceability of any provision of the agreement shall not affect the validity or enforceability of any other provision of the agreement.

Binding Effect

All provisions, covenants, terms and conditions of this agreement apply to and bind the parties and their legal heirs, representatives, successors and assigns.

Entire Agreement

This agreement constitutes the entire agreement between the parties and supersedes all other agreements or understandings between City and Contractor.

Authority to Bind Contractor

The undersigned affirm that all steps have been taken to authorize execution of this agreement, and upon the undersigned's execution, bind their respective organizations to the terms of the agreement.

IN WITNESS WHEREOF, the parties have executed this agreement on the dates as set forth below.

City of Goshen, Indiana
Goshen Board of Public Works and Safety
and Stormwater Board

Jones Petrie Rafinski

Jeremy P. Stutsman, Mayor

Printed: _____

Michael A. Landis, Member

Title: _____

Mary Nichols, Member
Date Signed: _____

Date Signed: _____

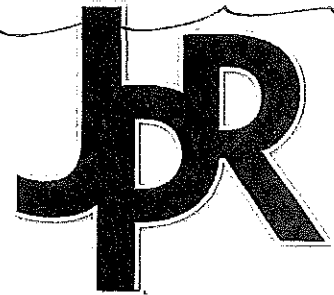


DOWNTOWN - MAIN STREET ARCH DESIGN

CITY OF GOSHEN

REQUEST FOR PROPOSALS - March 9, 2021

325 S. Lafayette Blvd. South Bend, IN 46601
www.jpr1source.com



JONES
PETRIE
RAFINSKI



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Land Surveying • Civil Engineering • Planning • Architecture • Project Funding • GIS • Environmental • Renewable Energy • Landscape Architecture

March 9, 2021

Goshen Engineering Department
204 E. Jefferson Street
Goshen, Indiana 46528

RE: DOWNTOWN - MAIN STREET ARCH DESIGN

Dear Selection Committee,

The design team at Jones Petrie Rafinski (JPR) understands the importance of the entry gateway project as a catalyst to further enhance the City of Goshen capturing and building upon the unique downtown culture and identity. Utilizing our extensive experience and background in creative design oriented entry features and structures the JPR team is uniquely qualified to deliver an outstanding project for the City. With the required disciplines of Survey, Structural and Civil Engineering as well as Architecture and Landscape Architecture all provided within our firm, we will deliver a project that is well coordinated, successfully navigates challenges and conflicts, ultimately achieving the City's goals and vision. We are confident that our design team offers the necessary design creativity, technical expertise, working history, and extensive experience of similar complex projects to make this gateway project a success for the City of Goshen.

In addition to the entry structures themselves, the JPR team has the roadway experience required and will consider all impacts to the right-of-way such as height requirements, site distance analysis and existing utility conflicts. The existing location and infrastructure brings numerous challenges into play and JPR has extensive experience in civil, site, structural and architectural design resulting in unique and successful solutions that result in outstanding projects throughout the region.

The design team will hold budget as a critical factor to the project success, cost estimating will be provided throughout the design process.

Our team has considerable experience and an excellent reputation with planning and design of complex structures, streetscapes and downtown environments. Our team resume includes a wide array of both local and national award winning projects that are similar in nature. The JPR team has also developed close relationships with several sign manufactures within the region. We look forward to collaborating with the City of Goshen to create a unique entry experience for visitors and patrons.

Respectfully,

Andrew Cunningham, PLA,
Design Director

JPR COMPANY BACKGROUND



Our company, Jones Petrie Rafinski (JPR) has earned its well-respected reputation as a highly regarded consulting firm for over three decades. Today, we offer a full selection of professional services to a broad spectrum of clients.



JPR is a service business, focused on the needs of our clients. Our goal is to be your single source for visionary, cutting edge and economical solutions.

To do so, JPR combines its eight services - into One Source to meet your needs and realize your vision.



ARCHITECTURE



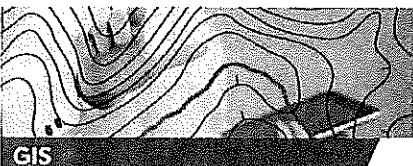
ENGINEERING



PLANNING



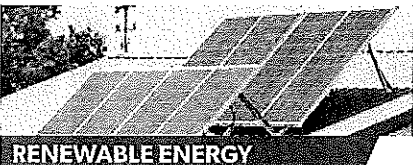
LANDSCAPE ARCHITECTURE



GIS



ENVIRONMENTAL



RENEWABLE ENERGY



LAND SURVEY

From pre-planning to project completion, we tailor our approach to meet client demands. This emphasis on superior client service sets us apart from our competitors and enables us to realize your project on time, on budget, exceeding expectations.

Structure:
Sub-S Corporation (Indiana)

Number of Employees:
60

History:
Founded 1988

Principals:
Kenneth K. Jones, Sr.
President
Kenneth K. Jones, Jr.
Vice President
David M. Rafinski
Vice President

Organizational Description:

Employee owned, architectural engineering firm with a broad area of practice, emphasis on municipal and development consulting services (Sub-S Corp.)

Locations:
300 Nibco Parkway
Suite 250
Elkhart, IN 46516
P: 574.293.7762

325 S. Lafayette Blvd.
South Bend, IN 46601
P: 574.232.4388

222 Pearl Street
Fort Wayne, IN 46802
P: 260.422.2522



ORGANIZATION OF KEY PERSONNEL

CITY OF GOSHEN



PROJECT MANAGER

**Andrew Cunningham, PLA
Senior Designer**

Contract Negotiations, Project Management,
Quality Control

CLIENT CONTACT

Our Company

Our full range of services, collaborative approach, and more than 30 years of experience allow us to deliver the innovative, sustainable solutions your project needs.

Whether it's the construction of a new community center or the renovation of a ballpark, we believe that the work we do together has the potential to make a big impact on your community for years-or decades-to come. That's why we believe project success goes beyond impeccable design, creative solutions, and adherence to timelines and budgets. To the team at JPR, the measure of success includes sustainability-customer satisfaction, community impact, and ongoing performance.

Mission

Provide superior client service, complete your project... on time, & on budget, exceeding your expectations. No sales staff, just experienced project managers... taking care of you.

Dedication

Our dedicated staff is ready to work for you. With our extensive project experience and extremely qualified team we are able to overcome any challenge your project might have.



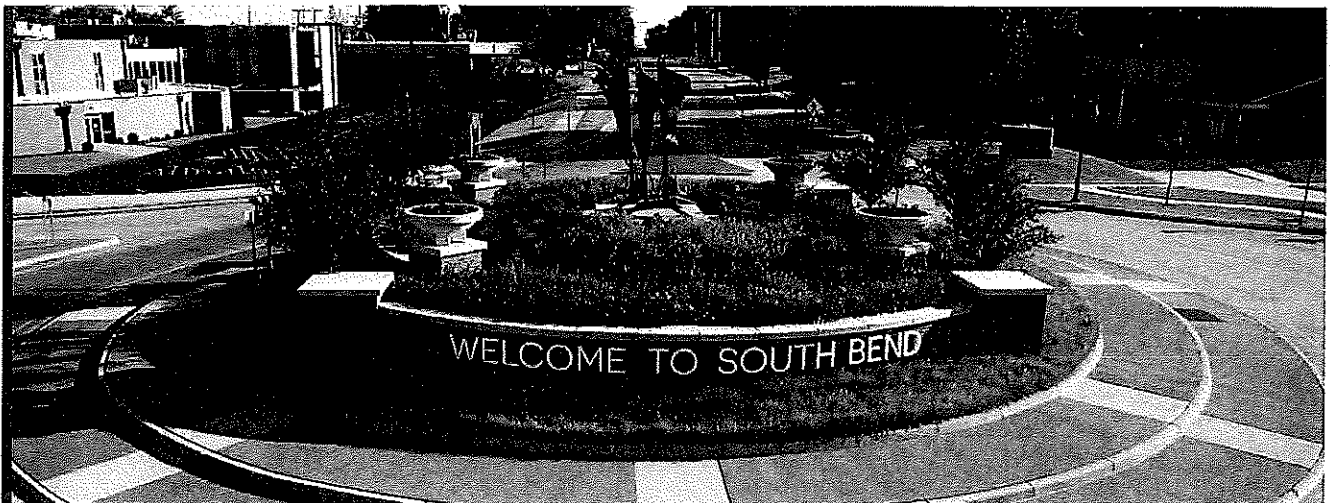
Djamel (Dj) Charvat Jr., AIA, NCARB
Senior Architect
Architecture Design



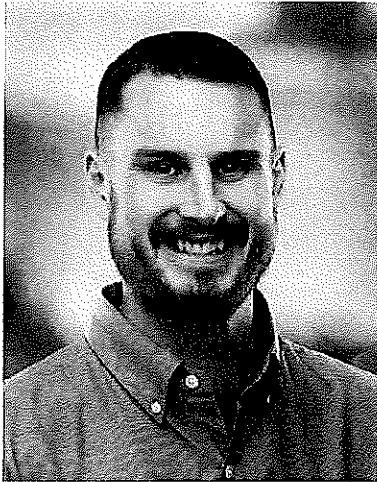
Claire Eltzroth, P.E.
Project Engineer
Civil Engineering & Site Design



Jordan Maxson, PE
Civil Structural Engineer
Structural Engineering & GeoTechnical



Andrew Cunningham, PLA, LEED AP
Design Director



As a design director at JPR, Mr. Cunningham adds a fresh and exciting approach to the design team. With experience in project types of all scales ranging from trail and streetscape design, athletic complex, park and recreation, to large scale community master plans, he keeps a close eye on the details bringing them together to achieve the end product and desired results.

Throughout his career Andrew has had the opportunity to manage and play a key role in many design projects such as community revitalization, transportation design and infrastructure improvements, stadium and athletic complex engineering, educational campus design, monument design, public space, plazas, and more. His background fuses the technical with the aesthetic aspects to produce a functional yet innovative design. Attaining an efficient and sustainable design is integral in Andrew's design process. In order to better achieve this goal, he became a LEED Accredited Professional.

Education

- Ball State University
- Bachelor of Landscape Architecture, 2010

Professional Registration

Indiana #LA21300012

Professional Affiliations

- American Society of Landscape Architects
- Indiana Parks and Recreation Association
- United States Green Building Council, LEED Accredited Professional

PROJECT EXPERIENCE

Four Winds Field Entry Gateway Arches - South Bend, IN

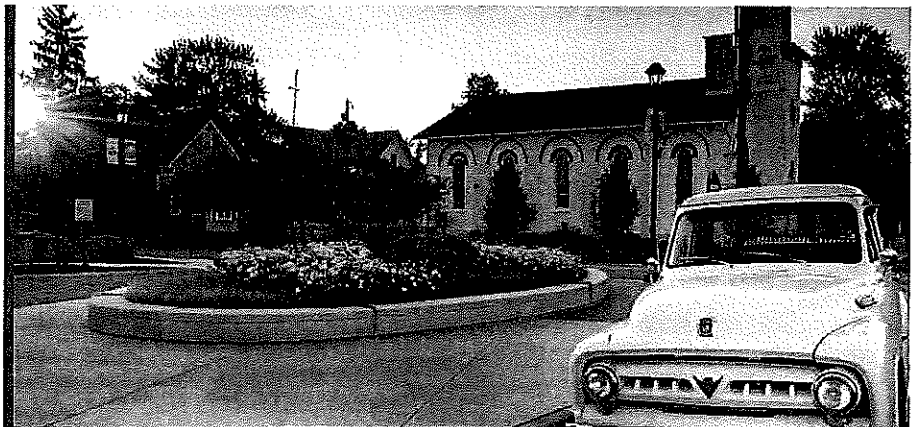
As part of the re-branding of Four Winds Field reinventing the entry experience was vital in the success of the stadium renovation. Multiple design iterations were explored in order to create a unique entry archway that captured the essence of the stadium, tied into the adjacent infrastructure and fit the budget.

Auburn Downtown Revitalization & Streetscape - Auburn, IN

As the principal in charge, managed the master planning through design development, contract documents and construction administration for multiple projects including streetscape renovation, utility infrastructure improvements, land acquisition, public plaza space, and public parking.

South Bend Entry Roundabouts - South Bend, IN

As a leader in the design and implementation of the City of South Bend entry roundabouts at the North and South Gateways to the community, Mr. Cunningham successfully captured the unique identify of the community creating a bold and welcome entrance to the city. Beyond the concept, detailed design and engineering ensured that the gateways were implemented successfully.





Education

- Ball State University
- B.S. Architecture
- Masters in Architecture,
Concentration in
Sustainability

Professional Registration

- Indiana #AR11500122
- Florida #AR99536
- Pennsylvania #RA408693

Professional Affiliations

- American Institute of
Architects
- National Council of
Architectural Registration
Boards

Mr. Charmat uses his sustainability-focused educational background and experience to design multiple building types in order to develop client's needs into creative and successful solutions. He brings experience in all phases of design, including conceptual design, detailed construction documents and integrated project management. A dedication to good design enables Dj to constantly recognize and address the environmental, economic and social challenges unique to every project.

Mr. Charmat has been involved in a variety of project types including mixed use, urban design, healthcare, retail, industrial, commercial, athletic and community-focused projects. Dj served as project designer and project manager for the \$13 million Cooley Law School Stadium Renovations in Lansing, MI, and leads the Studebaker renovations at the Renaissance District development in South Bend, IN, both of which require close coordination with a variety of in-house disciplines at JPR.

PROJECT EXPERIENCE

Riverbend Stadium - Beloit, WI

As senior architect led the design efforts in developing a new stadium in downtown Beloit. This new stadium will not only serve as the home field to the local minor league baseball team but will be a hub for many downtown activities. The style and design of the gateway entrances reflects the new renaissance that is happening in downtown Beloit.

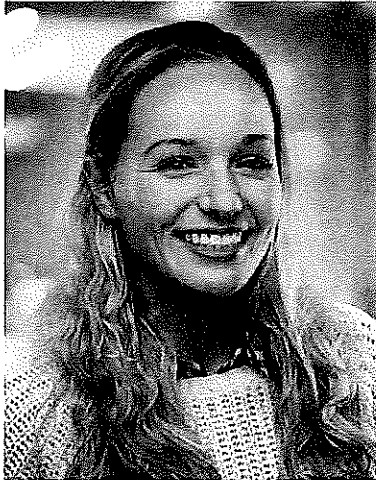
Renaissance District Masterplan - South Bend, IN

As the project manager provided oversight as well as direct design and engineering for the masterplan which led to construction documents and implementation. This complex project demanded a high level of coordination with multiple stakeholder organizations, consultants and permitting agencies.

UPMC Park Stadium Renovation - Erie, PA

Served as the senior architect for the renovation of the entry experience for UPMC stadium and event center. The new entry experience will welcome both the baseball stadium and hockey arena fans as well as connect visitors to the Warner Brother Theater that sits across from the sports facilities. This complex project demanded a high level of coordination and problem solving as it presented various challenges including an underground creek.





Claire Eltzroth graduated with a Bachelor of Science in Civil Engineering from Ohio Northern University. She began her career as a Civil Engineering Intern at the Ohio Department of Transportation and worked as a bridge design engineer after graduation.

In 2018, Claire began working for Jones Petrie Rafinski as a Graduate Staff Engineer. Claire's experience at JPR includes managing site design projects in addition to analyzing, master planning and engineering complex utility systems.

PROJECT EXPERIENCE

Bell Tower West - Merrillville, IN

Project Engineer responsible for assisting with the site design of a six-building skilled nursing facility. Helped with the stormwater management, which incorporated the use of best management practices. Assisted with the sanitary sewer design as well as utility layout.

Fairfield Community Schools - Goshen, IN

Assisted with the masterplan of the site reconfiguration to provide a safe, efficient, and awe-inspiring campus for students, faculty, and visitors. The masterplan consisted of a new bus drop-off location and route, a centralized outdoor athletic complex including tennis courts, softball and baseball fields, and a proposed indoor student activity center. As-built drawings and site reconnaissance were used to develop a logical configuration within the small, topographical challenging site.

Bethany Christian Schools - Goshen, IN

Contributed to the design of an 18-acre outdoor athletic complex consisting of a new track facility, high school and middle school soccer fields, softball field, entrance plaza and concessions building. Calculated and designed the utility layout, stormwater storage system and extensive site grading to ensure maximum drainage was maintained.

Education

Ohio Northern University
– B.S. Civil Engineering

Professional Registration

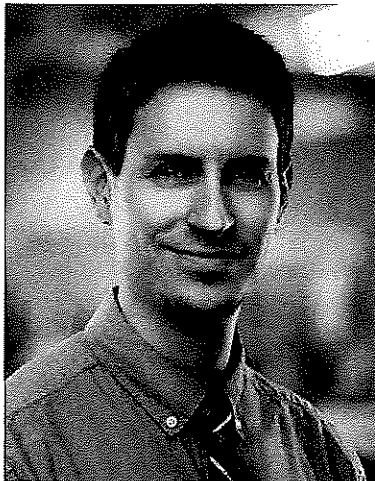
Indiana #PE12000703

Professional Affiliations

American Society of Civil Engineers



Jordan Maxson, PE
Civil Structural Engineer



Mr. Maxson has found his niche in the field of professional consulting with JPR, striving to provide the highest level of engineering services for each client. Meeting and exceeding client needs, regardless of the challenges presented, his insight concerning the details of shop fabrication processes and operations give an advantageous perspective by considering fabrication feasibility and production economics. The client has an opportunity to realize cost savings along with enhanced quality and reliability in the finished product.

Jordan is known for his detail oriented work ethic, and continues to expand his expertise as he provides a broad range of consulting services within the disciplines of structural and geotechnical engineering.

PROJECT EXPERIENCE

Education

Trine University
– B.S. Civil Engineering

Professional Registration

Indiana #PE11400392
Michigan #6201061957
New York #096176
Pennsylvania #PE084218
Delaware #22549
Montana #PEL-PE-LIC-47501
North Carolina #047624
New Hampshire #15053
Rhode Island #PE.0011861

Professional Affiliations

American Institute of Steel
Construction (AISC)
American Society of Civil
Engineering (ASCE)

Bristol Municipal Complex - Bristol, IN

Performed structural design and evaluation services for the existing building and new building expansion. Construction administration required remediation of the existing infrastructure which was old and contained areas that were structurally compromised.

UPMC Park Stadium Renovation - Erie, PA

Served as the EOR for structural engineering, providing analysis and design of a new four-story building as well as modifications and improvements to the existing stadium. This complex project demanded a high level of coordination and problem solving as it presented various challenges including an underground creek.

Riverbend Stadium - Beloit, WI

Led the structural engineering and provided support for a new stadium and entry gateway that will welcome visitors into downtown Beloit. This new stadium will not only serve as the home field to the local minor league baseball team but serve as a hub for many downtown activities. The style and design of the gateway entrances reflects the new renaissance that is happening in downtown Beloit.



PROJECT APPROACH

JPR will work with the City of Goshen and key project stakeholders to create a downtown entry that successfully captures the spirit of the community and enhances the identity. The overall project approach will include a combination of on-site meetings, web conferences and conference calls as required for the success of the project. Digital materials will be prepared to easily share and communicate design progress throughout the duration.

EXISTING CONDITIONS ANALYSIS

The JPR team recognizes the complexity of placing the structure within the existing downtown infrastructure. As such a topographic survey will be required for this project to facilitate a full and accurate design. Coordination with utility service providers to document existing infrastructure conflicts will be key.

Concurrent with the survey, a geotechnical report will be executed to analyze the existing soil conditions and verify their suitability along with amendment recommendations to ensure the structures can be supported.

SCHEMATIC DESIGN

The JPR team will begin the schematic design phase with a kick-off meeting (Meeting #1), to confirm the vision, goals and objectives. The preliminary concept will be reviewed along with a range of precedence study gateway structures to facilitate a broad range of ideas and options.



Based upon this feedback, the design team will prepare schematic design drawings with multiple gateway options explored. The information gathered during the existing conditional analysis will be utilized to identify the best structure foundation placement that minimizes conflicts and optimizes the visibility and impact of the entry features. Work plans for rerouting and resolving utility conflicts will be developed during this stage.

The JPR team recognizes that delivering a cost effective entry feature that fits within the budget is critical to the success of this project. During this stage a cost estimate will be developed for each option.

Once a Schematic Design plan is developed, JPR will continue utility coordination efforts with the various public and private utility representatives. JPR will request any potential work plans and related costs from these entities.

At the conclusion to this phase the JPR design team will coordinate a meeting to present the entry feature alternatives. (Meeting #2) The goal of this meeting will be to gain consensus, selecting a preferred design option to proceed.

DESIGN DEVELOPMENT

JPR will prepare Design Development drawings utilizing the approved Schematic Design. The design development drawings will serve as the basis for future Construction Documents and an updated cost estimate. The design team will continue the quality control review process to ensure the goals are achieved and conflicts are resolved. A detailed structural analysis will be performed to appropriately size the foundations, columns and cross members required to support the span. Impacts to the Right-of-Way will be addressed including the vertical height requirements, sight distance analysis and pedestrian and vehicular circulation and safety.

PROJECT APPROACH

The construction cost estimate will be revised utilizing the prepared Design Development drawings. Additional VE and/or design alternate items will be identified as needed to achieve a construction cost estimate within budget.

At the conclusion of this the detailed gateway structure design will be presented to the City of Goshen and the project stakeholders. (Meeting #3)

All feedback given will be incorporated into the final design and any required modifications will be made.

CONSTRUCTION DOCUMENTS

Upon approval of the Design Development drawings and construction cost estimate, JPR will develop working drawings and technical specifications to construct the work and an estimate of final construction costs will be developed.

In addition to the structural plans, site and civil layout documents will be produced to locate the structures. Plans to resolve and reroute any utility conflicts will be produced as part of the complete planset.

The project plans will be submitted simultaneously to all required reviewers, and comments will be responded to by JPR personnel in a timely fashion.

BIDDING & NEGOTIATION

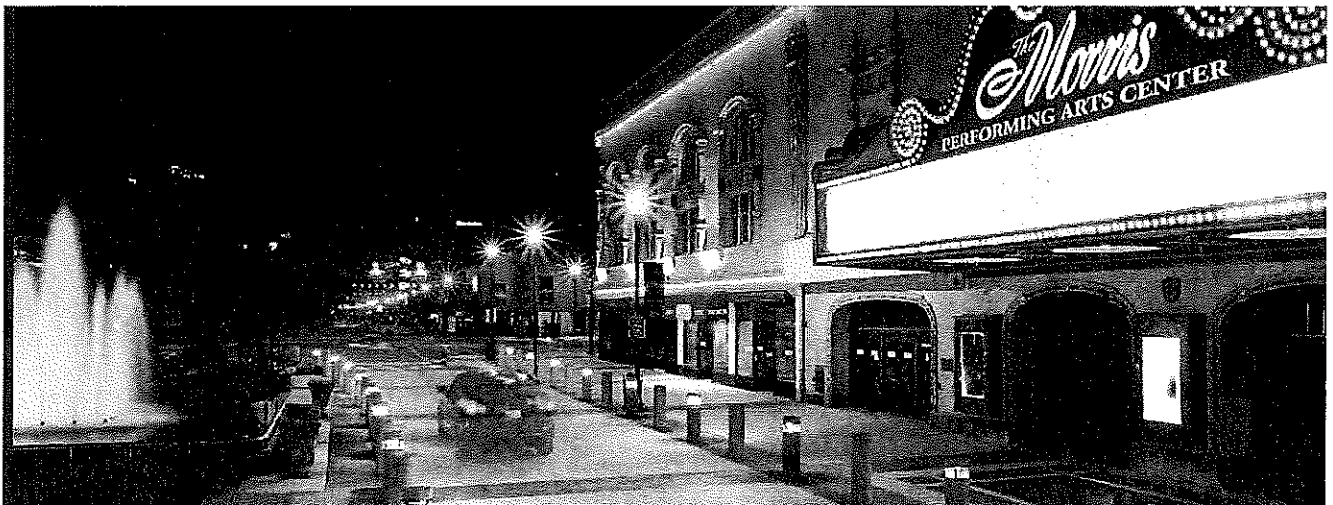
JPR will assist the City of Goshen in the bidding and negotiation phase of the project. This will include, but not be limited to the following:

- Production and distribution of plan sets and bid specifications;
- Answering Contractor questions, issuing Addendums and reviewing product specifications and substitutions.

CONSTRUCTION ADMINISTRATION

JPR will conduct periodic reviews (minimum (2) visits per month) of construction to ensure the Contractor(s) is providing the level of quality that is required for the project. The construction administration services will include the following:

- JPR will provide clarification/interpretations of the Contract Documents for the execution of work
- Review submittals such as Shop Drawings, with respect to Contract Documents produced by JPR;
- Prepare responses to Requests for Information (RFI);
- Prepare Change Orders for approval;
- Provide Field Reports and Punch Lists. Conduct inspections to determine the date or dates of Substantial Completion and the date of Final Completion.



RELATED PROJECT EXPERIENCE



Bartlett Street Reconstruction South Bend, Indiana

PROJECT COST: \$3.5 Million
CLIENT CONTACT: Roger Nawrot, City Engineer
574-235-5932
PROJECT MANAGER: Dave Rafinski, Vice-President
Chris Chockley, PLA, AICP

The City of South Bend Board of Public Works commissioned Jones Petrie Rafinski to assist them in the development of the Bartlett Street Roundabout and Reconstruction project. This project is one of the first projects for the city-wide 2-way street conversion planning initiative.

This project involved a multitude of stakeholders including, but not limited to, the City of South Bend, Memorial Hospital (Beacon Healthcare), the Indiana Department of Transportation, South Bend Medical Foundation, South Bend Community School Corporation, the St. Joseph County Historic Preservation Commission, and Downtown South Bend, Inc. During the Design Development Phase, JPR spearheaded the necessary coordination with the City and stakeholders to obtain comments and buy-in, in order to fully develop the final design from which to develop Construction Documents and Specifications.

Due to alternative funding sources this project has been split into two phases. The first phase involved the realignment of Bartlett Street and the redesign and construction of the entry drive and parking area

in front of the main entrance to Memorial Hospital. Detailed Maintenance of Traffic plans were developed and studied in length since the pedestrian access into the hospital must remain. The improvements within this portion of the project include new LED lighting, improved storm drainage, a revised and more efficient vehicular circulation and pedestrian drop off area, additional parking and landscaping.

The second phase of the project includes the development of a new two-lane modified turbo roundabout to be constructed at the intersection of Bartlett and Michigan Street (SR 933). Careful attention to the proposed roadway speeds, the inclusion of the largest legal semi-truck, and pedestrian and bicycle crossing points were required to design a successful, safe and efficient roundabout design.

The aesthetic aspects integrated into the overall project were critically important since these improvements are considered the main entrance to Downtown South Bend as well as the entrance to the Memorial Hospital Campus. This project set the standards for the future downtown two-way street conversion projects.

RELATED PROJECT EXPERIENCE



Four Winds Field Entrance South Bend, Indiana

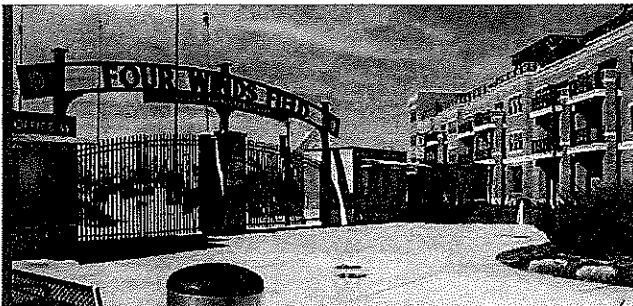
PROJECT COST: \$15 Million
CLIENT CONTACT: Joe Hart, President
574.276.4191
PROJECT MANAGER: David Rafinski, Vice President

In 2010, Jones Petrie Rafinski (JPR) was presented with the challenge of providing professional services to enhance the Four Winds Field (formerly Coveleski Stadium and Park) experience; to create an exciting, fun, family-oriented atmosphere for all to enjoy and remember.

As part of the stadium renovations, the outfield gateway entrance was updated to welcome fans to the upgraded stadium with a focus on giving visitors access to the stadium from the north east corner of the outfield. This entrance was developed with the thought of connecting baseball patrons to other downtown businesses. It also serves as a landmark feature for the revitalization and development of housing and business properties

along the outfield borders just outside the stadium. This backdrop to the newly constructed properties is breathing new life into an area that had little to offer previously. JPR provided 100% of the 2010-2015 Four Winds Field renovation designs and construction documents.

JPR has always based its firms core values on listening, understanding and client satisfaction. Our teams dedication, poise and vision have yet again helped us establish ourselves and gain repeating clients. The firm continues to work closely with the City's Redevelopment Commission, Downtown South Bend, Inc., and the new team owner to enhance the overall fan and player experience at Four Winds Field.



RELATED PROJECT EXPERIENCE



Riverbend Stadium

Beloit, Wisconsin

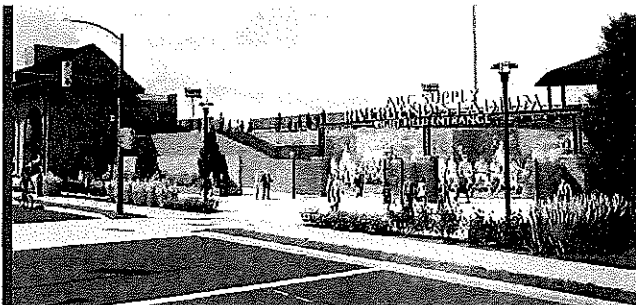
PROJECT COST: 32 Million
 CLIENT CONTACT: Hendricks Commercial Properties
 PROJECT MANAGER: Andrew Cunningham, PLA, ASLA

In an effort to continue the recent Renaissance seen in the City of Beloit, Wisconsin and to further enhance the downtown area to offer residents and visitors a unique experience, Hendricks Commercial Properties commissioned JPR to complete two major projects. First was the development of a District Masterplan framework for the downtown area. Second was the design and construction of a 3,500 seat capacity Minor League Baseball Stadium.

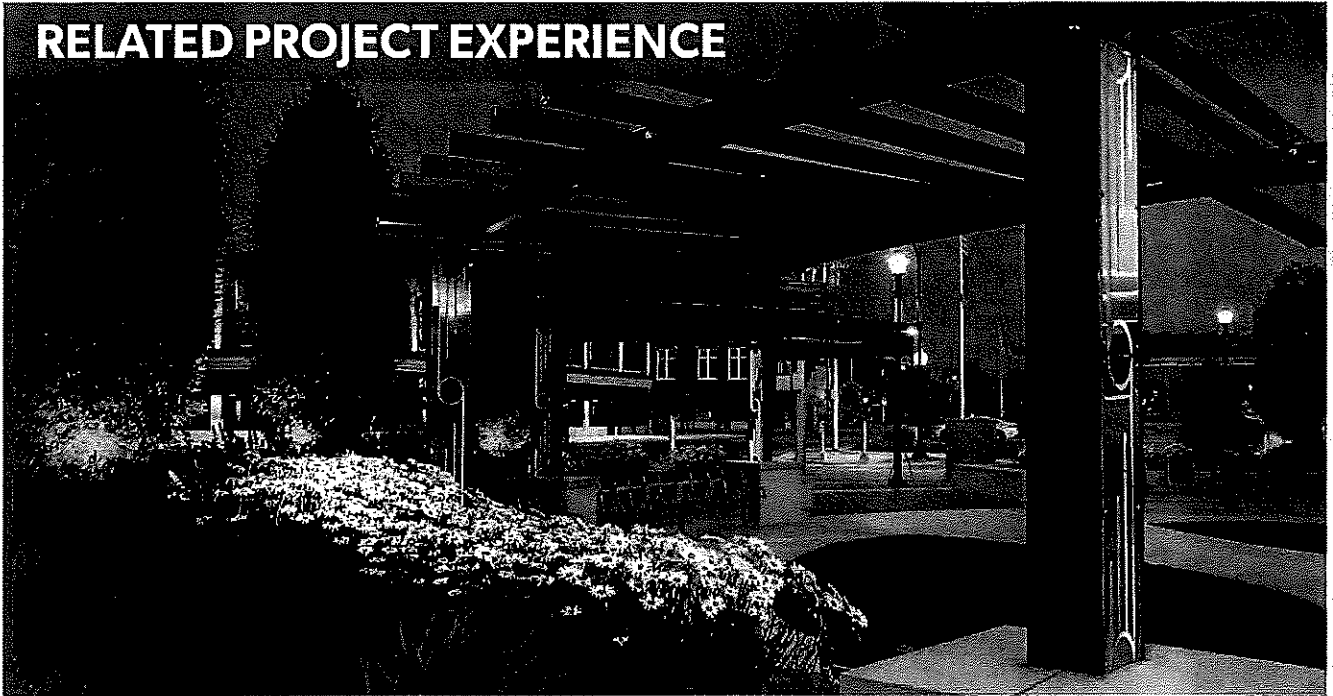
Working with the City of Beloit JPR first developed an extensive study and build-out of a District Masterplan framework which will be used as a guideline for future revitalization within the downtown area. The Masterplan included new retail locations as well as ways to connect the growing downtown region with other developments already occurring near the District. Upon the completion of the Masterplan, JPR was then tasked with designing a stadium that would be used as a shared community

space that will create a strong connection to downtown Beloit and provide beautiful, family-friendly amenities.

The JPR team set out to pull design elements from Beloit's rich industrial and railway heritage. The combination of rustic industrial materials and large archways of the Stadium pay homage to grand rail stations of the late 1800's. While reminiscent of early American days, the Riverbend Stadium was designed with the modern visitor in mind. The stadium will have a 360° concourse with family friendly features such as inflatables, comfortable private suites, concessions, and private event spaces. In addition to being the home of the Beloit Snappers, JPR designed the field to play host to a number of non-baseball related events including, soccer games, concerts and banquets. This Stadium will be a great resource and anchor for the City of Beloit.



RELATED PROJECT EXPERIENCE

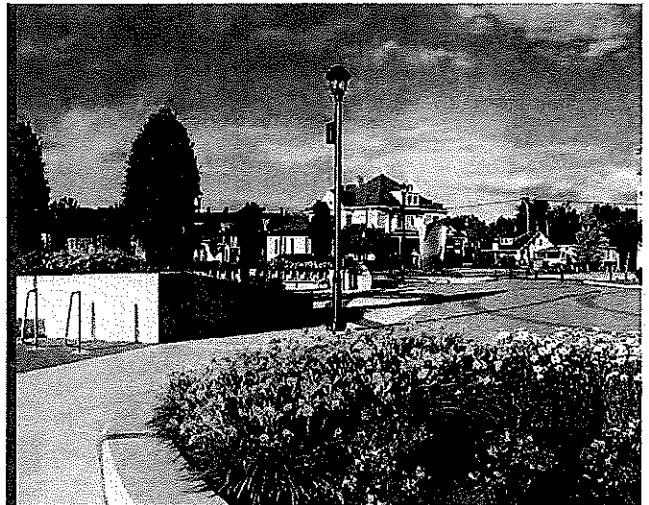
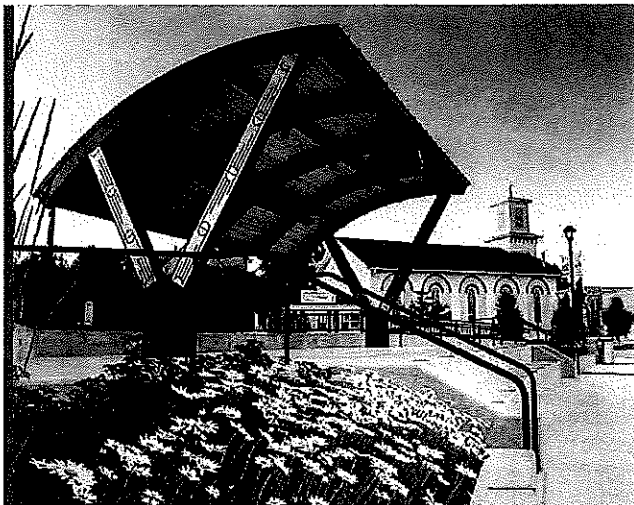


Auburn Cultural Plaza Auburn, Indiana

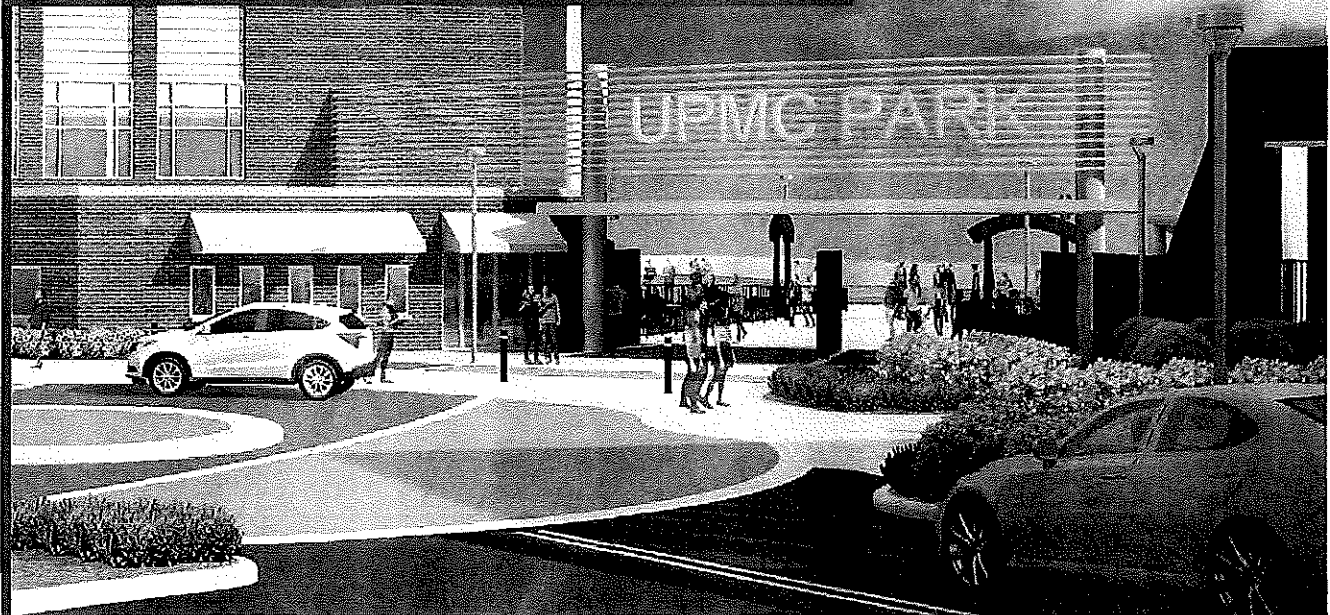
PROJECT COST: \$1.2 Million
CLIENT CONTACT: Jeff Durbin
PROJECT MANAGER: Andrew Cunningham, PLA, ASLA
Kevin McCrory, RLA, ASLA

JPR was commissioned by the James Foundation to provide a Cultural and civic plaza for the City of Auburn, Indiana. This multi-purpose space is designed to be used as a gathering space by both large groups for performances and festivals as well smaller groups and individuals with more intimate seating spaces. The Cultural plaza provides opportunities for art and sculptural pieces to be displayed throughout the site.

Various details, and decorative walls echo Auburn's rich automobile history through various shapes and profiles. A performance stage with an overhead canopy is located in the northwest corner. The central plaza space, serves as an audience space as well as a location for farmer's market and festival vendors or even parking. The plaza is paved with permeable pavers in order to retain the stormwater on-site.



RELATED PROJECT EXPERIENCE



UPMC Park Renovations Erie, Pennsylvania

PROJECT COST: \$20 Million
CLIENT CONTACT: John 'Casey' Wells Executive Director
PROJECT MANAGER: Dj Charvat, AIA, NCARB

In 2017, Jones Petrie Rafinski (JPR) was engaged to provide conceptual design and budgeting services for a renovation project at UPMC Park, home of the Double-A Erie Seawolves. The existing stadium is located next to the Erie Insurance Arena, which is home to the Otters amateur hockey team. Special focus was aimed at creating synergy between the two venues.

The following design concepts were included in the overall masterplan:

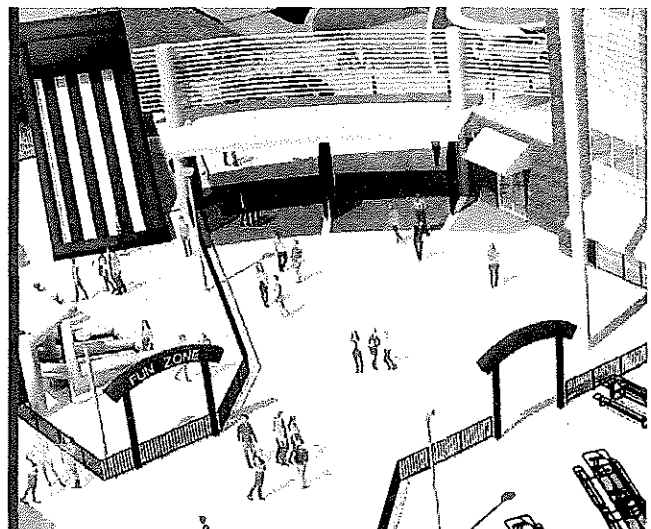
New 4-story club venue in left field which incorporates team stores, picnic support, team offices, storage, and an event venue connected to the adjacent arena.

Project Features:

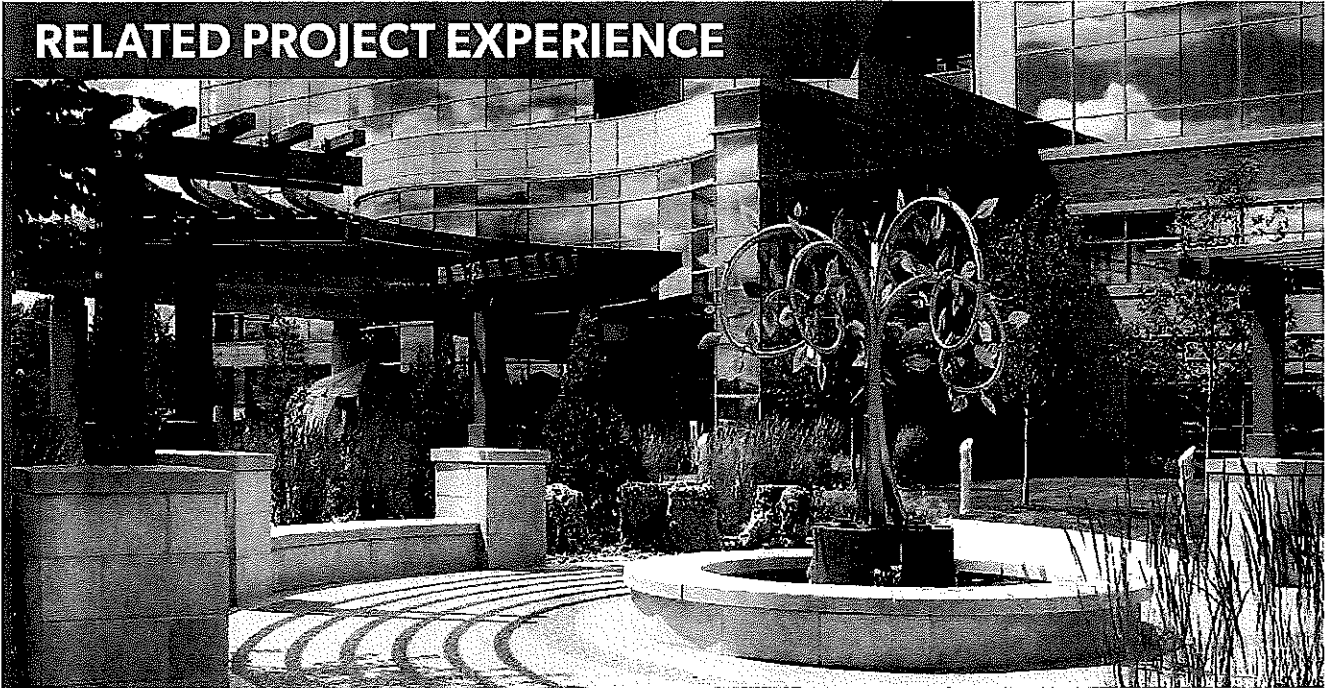
- Streetscape improvements
- Concession & commissary improvements
- Team office renovations
- Restroom renovations
- Suite level renovations
- Batting cage improvements
- Existing right field party deck improvements
- New scoreboard/video display package

- New home run deck venue in right field
- Relocated main entrance plaza and box office
- Existing gate entrance improvements

In addition to working with the local Erie Events organization and stakeholders to identify and develop design concepts for these elements, JPR also prepared budget information to help with future project phasing.



RELATED PROJECT EXPERIENCE



Parkview Contemplative Garden

Fort Wayne, Indiana

PROJECT COST: \$500,000
CLIENT CONTACT: Mark Hisey
PROJECT MANAGER: Andrew Cunningham, PLA

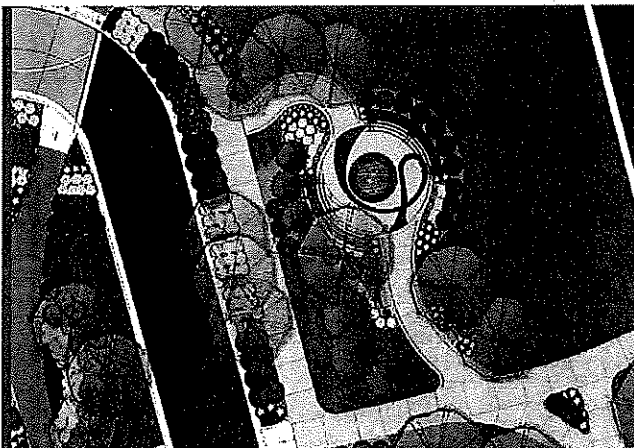
Continuing on the success of the Parkview Cancer Institute, Parkview Health System selected JPR to lead the site design efforts for the development of the Contemplative Garden space.

Parkview Health wanted to provide a garden space that allowed patients, family members, and workers an opportunity for quiet contemplation and stress release. Being located outside of the Cancer Institute, the challenge of this space was to avoid a somber feeling,

but rather invoke thoughts of encouragement and support on one's journey to recovery.

Key Features:

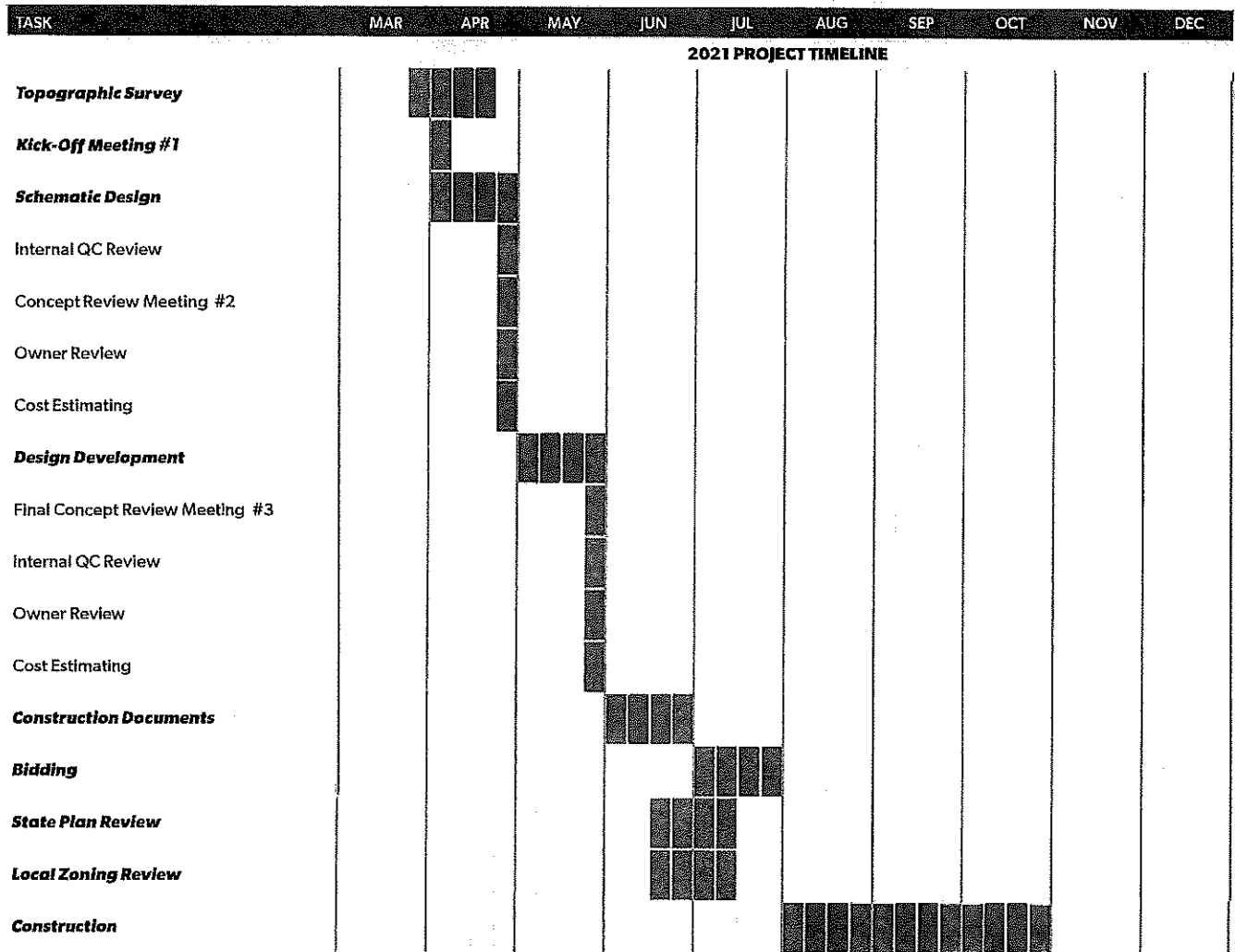
- Water fountain
- Seatwall & overhead trellis
- Gathering space
- Custom inlaid words of encouragement in pavement



PROJECT SCHEDULE

Our team of dedicated professionals is ready to work for you. With our highly experienced staff we are remarkably qualified to perform the services needed for your project. It is with great pride that we help many clients, such as yourselves, complete their project(s) on time and within budget.

Project: DOWNTOWN - MAIN STREET ARCH DESIGN



PROJECT FEES

COMPENSATION

The billing schedule for work will be on a monthly basis and will be billed on a Time and Expense Not-to-Exceed basis for the work performed to complete each task.

Design and Preconstruction Costs.....\$30,000

- Topographic Survey*
- Geotechnical Investigation*
- Conceptual Design*
- Schematic Design*
- Design Development*
- Construction Documents*
- Bidding*
- Permitting*
- Construction Administration*



**PUT YOUR IDEAS INTO ACTION.
CONTACT JPR TODAY.**

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325 S. Lafayette Blvd.
South Bend, IN 46601
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Fort Wayne, IN 46802
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**Engineering Department
CITY OF GOSHEN**

204 East Jefferson Street, Suite 1 • Goshen, IN 46528-3405

Phone (574) 534-2201 • Fax (574) 533-8626 • TDD (574) 534-3185
engineering@goshencity.com • www.goshenindiana.org

MEMORANDUM

TO: Goshen Board of Public Works & Safety

FROM: Goshen Engineering

RE: SIDEWALK PAVING PROGRAM (PN:2021-0001)

DATE: 4/26/2021

Michiana Tree Works Inc. had the lowest quote for the removal of fourteen trees and stump grind for the sidewalk paving project. There are ten trees on West Avenue and four trees on Dewey Avenue that require removal as they have caused the existing sidewalk to fail and are in conflict with the future sidewalk replacement. The work will be complete by May 14, 2021. The Engineering Department worked with the City Forester to assess the trees in the area. There will be a replacement of trees this coming fall.

The City received two of three requested quotes for the removal of the trees.

Quotes; Michiana Tree Works Inc. came in at \$12,500.00

Patriot Tree Corp. came in at \$23,000.00

Requested Motion: Move to approve the agreement with Michiana Tree Works Inc. to remove and stump grind fourteen trees for the Sidewalk Paving Program for the amount of \$12,500.00.

**APPROVED:
BOARD OF PUBLIC WORKS & SAFETY
CITY OF GOSHEN, INDIANA**

Jeremy Stutsman, Mayor

Mary Nichols, Member

Michael Landis, Member



Kent Holdren, Superintendent
WATER UTILITY, CITY OF GOSHEN

308 North Fifth Street • Goshen, IN 46528-2802

Phone (574) 534-5306 • Fax (574) 534-4281 • TDD (574) 534-3185
kentholdren@goshencity.com • www.goshenindiana.org

4/26/2021

Request for Road Closure on 400th block of North 8th Street

To the Board of Public Works and Safety and Storm Water;

The City of Goshen Water and Sewer Department will be installing a water service at 413 N 8th St.

The work will require excavation of the road, with a trench that will be approximately 8' feet in depth. For the safety of the work crews and the public, the City is requesting permission to close North 8th Street thru traffic, between Center St. and Summit St., on Wednesday 4/28/21, starting 8:00 am, and reopening for traffic on Friday evening 4/30/21.

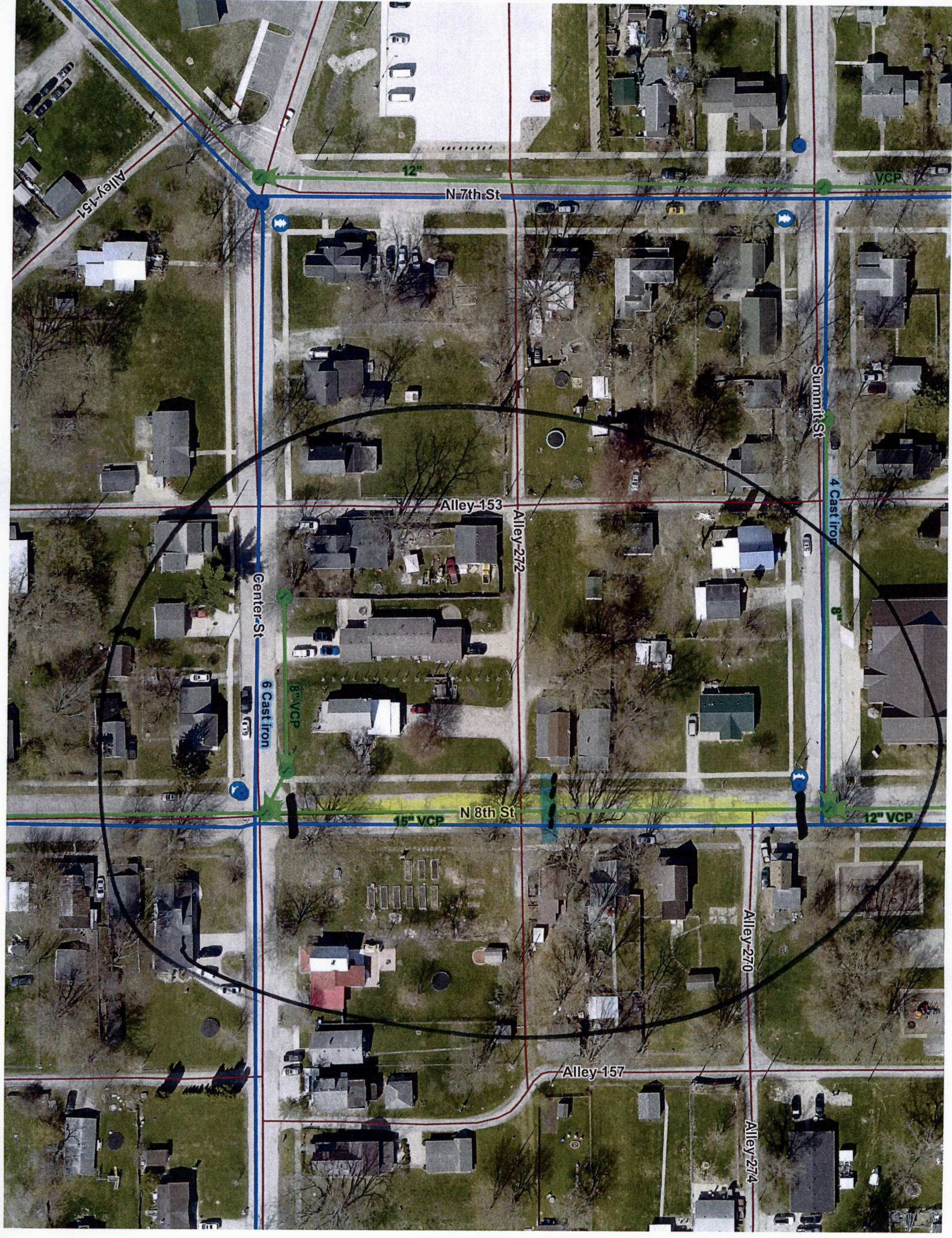
See attached map for reference.

We will notify Goshen Schools, EMS and insure that the garbage is moved to the appropriate location for pick up.

Regards;

A handwritten signature in black ink, appearing to read "Kent Holdren", with a long, sweeping underline.

Kent Holdren
Superintendent of Goshen Water Department



12"

N-7th-St

VCP

Alley-151

Summit St

4 Cast Iron

Alley-153

Alley-272

Center-St

8" VCP

6 Cast Iron

15" VCP

N 8th St

12" VCP

Alley-270

Alley-157

Alley-274



Engineering Department
CITY OF GOSHEN

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Phone (574) 534-2201 • Fax (574) 533-8626 • TDD (574) 534-3185
engineering@goshencity.com • www.goshenindiana.org

MEMORANDUM

TO: Board of Public Works and Safety

FROM: Goshen Engineering Department

RE: **EAST REYNOLDS STREET LANE RESTRICTIONS (JN: 2020-0017)**

DATE: April 26, 2021

NIPSCO has requested permission to restrict traffic along portions of East Reynolds Street from Lincolnway East (US 33) to Douglas Street, from Monday, April 26, until Thursday, May 6, 2021. Proper traffic controls will be utilized, per INDOT standards. Their subcontractor will be relocating additional gas services in preparation for roadway reconstruction in this area.

Requested motion: Move to approve lane restrictions along Reynolds Street, east of Lincolnway East (US 33), from April 26 until May 6, 2021

ACCEPTED:

City of Goshen
Board of Works & Safety

Jeremy Stutsman, Mayor

Mike Landis, Board Member

Mary Nichols, Board Member



**Engineering Department
CITY OF GOSHEN**

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MEMORANDUM

TO: Board of Works Public and Safety

FROM: Engineering

RE: **NORTH MAIN STREET IMPROVEMENTS
(JN: 2016-0020)**

DATE: April 26, 2021

DBL will be performing work to install pavement markings on North Main Street. The work will require partial lane restrictions on North Main Street between Pike Street and Middlebury Street by Meadowlark Cars, with DBL providing traffic control. DBL will maintain open access for the businesses and residents on North Main Street. The lane restriction will occur April 27-29, 2021.

Requested motion: Move to approve the North Main Street partial lane restriction between Pike Street and Middlebury Street on April 27-29, 2021.

**City of Goshen
Board of Works & Safety**

Jeremy Stutsman, Mayor

Mike Landis, Board Member

Mary Nichols, Board Member



City Clerk-Treasurer
CITY OF GOSHEN

202 South Fifth Street, Suite 2 • Goshen, IN 46528-3714

Phone (574) 533-8625 • Fax (574) 533-9740

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Date: 26 April 2021

To: Board of Public Works & Safety

From: Adam Scharf, City Clerk-Treasurer

Re: Request to place moving storage container at 322 S. 5th St. May 24-31

Tim and Crissie Buckwalter request permission to place a PODS moving container (illustration below) in the street in front of 322 S. 5th St. while they unpack and move in. They have requested May 24 delivery from the storage company, but there is some uncertainty as to whether the company will hit that target date. The Buckwalters anticipate 1-2 days unloading time once the unit is delivered.

The Buckwalters have indicated that they will attempt to have the container placed in a private driveway, but are requesting permission for street placement as a backup in case maneuvering and placement in the driveway is not feasible.

Guidance from Engineering / Street Department is requested regarding visibility aids, etc.



Suggested motion:

Approve the placement of a moving and storage container in the street parking area in front of 322 S. 5th St. from May 24-31, 2021.



Office Location: 410 W Plymouth Ave • Goshen • IN 46526
Phone: 574-537-0986 • **E-Mail:** enviromental@goshencity.com
Staff: Brandi Devoe • Theresa Sailor

To: Board of Public Works and Safety
From: Aaron Sawatsky-Kingsley
Date: April 23, 2021
Re: Goshen Government Operations Climate Action Plan

In April of 2019, youth and students of the City of Goshen brought a resolution to the City Council asking that the City create and adopt a Climate Action Plan, with a goal of zero emissions by 2035. City Council passed that resolution unanimously. Since then, the City has completed two greenhouse gas emissions inventories and spent nearly a year (with support from the Indiana Sustainability Development Program interns) drafting a Climate Action Plan for our local government operations. The process has involved conversation and comment from Department Heads and many city employees. This Plan includes the supporting research and operational strategies which can put us on the path to the overall goal of zero emissions. Efficiency, cost-savings, and resilience are important short-term and especially long-term outcomes.

Suggested Motion: Move to approve the adoption of the 2021 Climate Action Plan for Goshen Government Operations and authorize the Mayor to sign on behalf of the Board of Public Works and Safety.

Jeremy Stutsman
Mayor of Goshen



Office Location: 410 W Plymouth Ave • Goshen • IN 46526
Phone: 574-537-0986 • **E-Mail:** enviromental@goshencity.com
Staff: Brandi Devoe • Theresa Sailor

Acknowledgments

City of Goshen

City Council

Jeremy P. Stutsman, Mayor

Brett Weddell, Council At Large

Julia King, Council At Large

Jim McKee, District 1

Doug Nisley, District 2

Matt Schrock, District 3

Megan Eichorn, District 4

Gilberto Perez Jr., District 5

Zoe Eichorn, Youth Advisor

Adam Scharf, Clerk-Treasurer

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Kendel Martin

Theresa Sailor

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IU Environmental Resilience Intern

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Josh Corwin

Carl Gaines

David Gibbs

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Kent Holdren

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Richard Mehl
Jose Miller
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Dustin Sailor
Adam Scharf
Randy Sharkey
Danny Sink
Bodie Stegelmann

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Abbreviations

Abbreviation	Term
BAU	business-as-usual
CAP	climate action plan
CO ₂ e	carbon dioxide equivalent
EPA	Environmental Protection Agency
EV	electric vehicle
g	gram
GHG	greenhouse gas emissions
GW	gigawatt
GWh	gigawatt hours
GWP	global warming potential
HVAC	heating, ventilation, and air conditioning
kg	kilogram
kW	kilowatt
kWh	kilowatt hour
l	liter
lb	pound
LED	light-emitting diode
LEED	Leadership in Energy & Environmental Design
LFG	landfill gas
LGOP	Local Governmental Operations Protocol
CH ₄	methane
MG	million gallons
MMBTU	million British thermal units
MT	metric ton
MTCO ₂ e	metric tons of carbon dioxide equivalent
MW	megawatt
NIPSCO	Northern Indiana Public Service Organization
N ₂ O	nitrous oxide

ppm	parts per million
PV	photovoltaic
SMP	sustainability master plan
VFD	variable frequency drives
WCP	water conservation plan

Introduction by Aaron Sawatsky-Kingsley

If there ever was such a thing as an "old normal," we won't be going back to it. The new normal is one of change and adaptation. On the one hand, cultural and technological change is something that we have become fairly used to over the twentieth century and into the twenty-first century. On the other hand, large-scale changes, which we don't have much control over, and which require difficult choices, are not a part of our preferred reality. Climate change is a large-scale set of forces that will increasingly require difficult decisions from us during this century. Anticipating the impacts of climate change ahead of time, doing what we can to mitigate those impacts now, and setting into motion now adaptations to those impacts, will allow us to keep open the broadest set of decisions in the future. This Government Operations Climate Action Plan for the City of Goshen is designed to give us the best options.

In 2019, the Youth Environmental Resolution was unanimously adopted by the Common Council in a 6-0 vote. While non-binding, the Resolution called for, among other things, government operations to achieve a net-zero emissions goal by 2035 and to create a Climate Action Plan for the City of Goshen. This plan is the result of the insistence and aspirations of Goshen's youth. Goshen completed its first greenhouse gas emissions inventory in 2019 (assessing 2017 data) and the second inventory in 2020 (assessing 2019 data). This emissions data forms the Climate Action Plan's backbone – it tells us where we are currently, which informs what we need to do to meet our goal: net-zero emissions by 2035.

In 2019, City government operations emitted 9,396 metric tons of carbon dioxide equivalents (MTCO_{2e} – an equation used to express the heat-trapping potential of different greenhouse gases in terms of carbon dioxide, the most plentiful of these gases). This number is maybe interesting to compare to other communities, but ultimately each community is unique, and comparisons are relatively meaningless. However, it is meaningful to us in Goshen in that it tells us what our emissions are, and because of the inventory detail, we know where they are coming from. This detail is laid out carefully in the following document, but the highlights are these: Water and Wastewater Utility Processes - 5,480 MTCO_{2e}; Buildings and Facilities - 1,410 MTCO_{2e}; Vehicle Fleet - 1,505 MTCO_{2e}; Environmental Center operations – 349 MTCO_{2e}; Street Lighting – 652 MTCO_{2e}.

These emissions cost us money in at least two broad categories. Emissions cause and exacerbate climate change which can cost us money in the form of the many economic disruptions it creates, from weather disasters to crop failure to environmental degradation to human distress and violence. Emissions also cost us money because they directly reflect the energy we buy and use (electricity, natural gas, gasoline, diesel, etc.), especially the inefficient ways we use it. Emissions tell us where we need to search for better, cost-saving operating options. Reducing emissions will save us money.

Not all of the emissions from our government operations can be easily reduced. The largest portion of our emissions – Water and Wastewater Utility Processes (58%) – is a very tricky set of emissions. Water and wastewater have to be treated, no way around that. While we are finding ways to reduce energy consumption in significant ways related to these essential operations, water and wastewater treatment will likely always be a large source of our emissions.

The Climate Action Plan lays out goals and strategies for reducing various sectors of our emissions. All of these reductions will take effort, cooperation, willingness to adapt, and funding. Cost-benefit analyses show that spending money to reduce emissions ultimately saves us real dollars in fuel costs. For example, an analysis of a \$5000 investment in energy-saving retrofits at the Rieth Interpretive Center could save \$4,700 annually in

energy costs. Upgrading the boiler-heating system at the Police Department will yield a \$30,180 savings over the 20 year lifetime of the new unit. Investment in cleaner electric and hybrid-electric vehicles has similar returns.

This Climate Action Plan proposes that by 2026, we aim to reduce our government operation emissions by 40%. While the strategies outlined below can help us achieve this first step in our overall goal of net-zero emissions, this document does not dictate the process that "should" be implemented to reach the goal. It is up to the various Departments to choose their path to GHG reduction. Likewise, it is up to the Mayor to support these efforts and the Goshen City Council to provide appropriate funding levels to enable Departments to reach those goals. Furthermore, it is important to note that we are at the beginning of a long process; as we work to reduce emissions and increase efficiencies, we will discover trends and technologies which this Plan could not anticipate.

It's also important to note that the primary supplier of electricity and natural gas for our operations, NIPSCO, is in the process of eliminating its coal-generators and replacing them with 65% renewable energy generation. These changes alone will reduce our emissions by close to 40% by 2028. This is a significant development, making our task, in some ways easier. However, this news should not make us complacent. The work which is in front of us, in many ways, is to reduce the most pernicious, most difficult sets of emissions, such as those generated by cleaning our water and wastewater. To that end, this document will need to be a living and breathing document, reviewed and updated regularly, along with our regular emissions inventories. As stated above, adapting to change is our new normal, and even this Climate Action Plan will have to reflect this reality.

Mayor Jeremy P. Stutsman

Executive Summary of the 2021

Goshen Local Government Operations Climate Action Plan

Greenhouse gases are essential to life on Earth. These gases provide a shield from the Sun's solar radiation, and they help the Earth retain some of that heat, allowing the planet to exist at a temperature suitable for life to thrive. However, human activity – specifically the releasing of ancient carbon dioxide into the atmosphere by burning fossil fuels – is contributing greenhouse gases at an increasing rate. As a result, the Earth is warming faster than it would naturally, which poses hazards to all life on Earth.

A 2020 study of Goshen's greenhouse gas emissions calculated that 9,396 metric tons of carbon dioxide equivalents were released into the atmosphere by government operations in 2019.

Goshen's Climate Action Plan for Local Government Operations is the City's first attempt to reduce its impact on the global climate crisis. This plan is also an attempt to curb the climate change impacts that threaten the City and local community. At its heart, this plan is offered as a map toward equity for all of Goshen's residents, now and into the future, human and non-human alike. Seeking a more fully humane community is in the deepest interest of all.

To achieve these goals, the Environmental Resilience Department presents nine major Emission Reduction Strategies. Each strategy comprises unique programs and goals that will need implementation. After implementation, monitoring efforts should occur to evaluate this plan's efficacy. When sections of this plan appear to be lacking or ineffective, the City should alter its course of action to achieve more desirable outcomes. The sum of these efforts are expected to achieve net-zero emissions by 2035 and increase resilience across the City and community.

Net-Zero by 2035

The Youth Environmental Resolution (i.e., Resolution No. 2019-19) asks for creation of a Climate Action Plan and reduction of emissions to net-zero by 2035. The resolution is non-binding but was passed unanimously with bipartisan support, 6-0, in April 2019. The unique nature of the resolution – crafted and submitted by Goshen high school students and supported by other youth and children of the Goshen community – fills it with an extra-legal urgency and gravity.

Resolution No. 2019-19 also calls for setting short term benchmark goals to track progress towards the main target. By the end of 2026, the City will aim for a 30% reduction of electricity consumption in buildings, a 20% reduction in natural gas consumption in buildings, and 25% reduction in gasoline consumption by the City's fleet.

Emission Reduction Strategies

Strategy 1 (S1): Energy Management of Buildings and Facilities

A fundamental component of reducing emissions is to reduce energy consumption. The energy used to power government operations (lights, air conditioners, heaters, printers, computers) originates from electricity and natural gas. Energy consumption, consequently, results in the emission of greenhouse gases. Reducing energy can reduce emissions.



Reducing energy also has monetary benefits. Initial research indicates that the City can expect to save \$65,000 per year in Buildings & Facilities. These anticipated savings result from the goals below.

Summary of the program and goals.

Program: Increase Efficiency of Building Systems and Technologies

Goal 1: Conduct energy audits on all City buildings and facilities by 2024.

Goal 2: Develop a heating and cooling policy relevant to each City operated building by 2022.

Goal 3: Evaluate landscaping around City buildings and, where needed, develop a plan to maximize shade production.

Goal 4: Design new facilities with efficient building and energy systems.

Goal 5: Explore telecommuting and alternative work schedules to reduce resource consumption.

S2: Solid Waste Management

The City of Goshen generates two primary forms of solid waste: trash generated by City employees throughout the workday and green waste (leaves and brush) picked up curbside and composted or chipped at the Goshen Environmental Center. The decomposition of these products either in a landfill or in a composting pile generates carbon dioxide.

Lifetime emissions of any product include creating, collecting, or extraction of raw materials, fabrication, transportation, use, and disposal of a product. Using less can reduce all of these emissions, but reducing one or more of the components in the lifetime emissions sequence can make a difference. An example of this is when the City purchases items made locally, there is a reduction in lifetime emissions. When green waste is composted on the property where it is generated, there are no emissions generated to take it to the Environmental Center.

Summary of the program and goals.

Program: Solid Waste Reduction Program (SWRP)

- Goal 1: Review Green Waste processes to innovate reductions in GHG emissions.
- Goal 2: Stock reusable plates and cutlery; buy 20% or better post-consumer or biodegradable food service items when possible.
- Goal 3: Evaluate and implement compost opportunities.
- Goal 4: Develop and adopt policy for waste management protocol, including for regular waste and “universal” waste (e-waste, fluorescent bulbs, etc.).
- Goal 5: Evaluate consumable products using financial and environmental cost-benefit analyses.
- Goal 6: Evaluate current waste removal and recycling contracts for best management practices.

S3: Sustainable Transportation

Many greenhouse gases are emitted from typical transportation activities. The largest percentage of Goshen’s government transportation emissions come from heavy equipment, large trucks, and police operations, with smaller emission amounts from other regular operations. These combined activities resulted in 1,505 MTCO₂e. Increasing sustainable transportation is crucial to reducing Goshen’s government emissions.



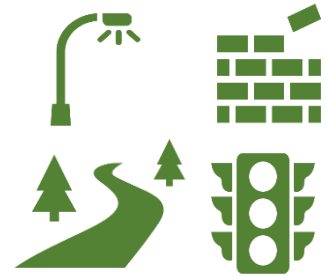
Summary of the programs and goals.

Program 1: Green Fleet Program

- Goal 1: Fund the adoption of energy efficient light-duty vehicles (including hybrid-electric and electric) to reduce emissions by 25% by 2026.
- Goal 2: Develop and implement gasoline emissions reduction strategy for each Department, resulting in emissions reduction of 25% or mean fuel economy of 27 mpg by 2026.
- Goal 3: Develop strategic plan for municipal fleet electric vehicle charging stations.
- Goal 4: Develop an education and awareness campaign to encourage employee bicycle commuting.
- Goal 5: Work to achieve “Silver Status” as a Bicycle Friendly Community.

S4: Sustainable Infrastructure

Pursuing emission reduction goals reveals complex hurdles that require new or improved infrastructure. These supporting systems (roads, streetlights, stormwater, wastewater, and water infrastructure) require on-going maintenance and replacements. A changing climate will require revisions of policies and standards, such as designing to heavier spring rainfall loads and increase in freeze-thaw events during the winter. Introduction and maintenance of green infrastructures – designed to take advantage of natural systems - will help mitigate impacts from increased precipitation and heat



Summary of the programs and goals.

Program Sustainable Infrastructure and Development

- Goal 1: Convert more than 95% of streetlights, parking lights, and traffic signals to LED by 2025.
- Goal 2: Evaluate and revise development standards to meet the challenges of climate change impacts.
- Goal 3: Develop and train a green infrastructure maintenance crew.
- Goal 4: Increase the miles of “Complete Streets” to increase safe, low-emissions, high access travel.

S5: Utility Processes

The Goshen Water and Wastewater Utility utilizes electricity and natural gas to pump groundwater for water treatment and distribution of drinking water throughout the City and collect and process wastewater. The Utility generates fifty-eight (58) percent of all MTCO₂ emissions in government operations, with most of that energy used to power pumps.

The Utility uses approximately 7,345,718 kWh of electricity and 156,108 therms of natural gas annually, generating 5,480 MTCO₂ emissions.

Currently, the WWTP is undergoing expansion and efficiency improvements. As a result of those improvements, the wastewater treatment plant is expected to save 1,321,000 kWh annually, equating to 858 MTCO₂. That is a twenty-one (21) percent reduction in emissions at the wastewater treatment plant and a 9.1% reduction of MTCO₂ in overall city emissions.

Summary of the programs and goals.

- Goal 1: continue to encourage and support professional learning opportunities, evaluating new strategies and knowledge sharing.

S6: Sustainable Land Use

Protecting and enhancing ecosystems will be a critical factor in the natural environment's success in and around Goshen. Yet, this task is complex and must go beyond individual species to have a meaningful impact. Supporting ecosystems and biodiversity at large will ensure Goshen continues to enjoy the intrinsic value and economically measurable benefits that the natural environment provides. Preserving floodplain and wetlands and adopting a flood resilience plan responsive to climate science are critical characteristics of sustainable land use.



Summary of the program and goals.

Program: Conserving Biodiversity through Land Use Planning

- Goal 1: Develop or update long-term land-use plans for city-owned property.
- Goal 2: Incorporate Canopy Goal objectives and apply appropriate tree maintenance practices on all City properties and rights-of-way.
- Goal 3: Develop City-wide landscape maintenance policies on fertilizer, irrigation, mowing, and other practices, aimed at best sustainable use.
- Goal 4: Incorporate longer-term climate projections as part of land use planning.
- Goal 5: Collaborate with specialists to develop and implement a flood resilience plan.
- Goal 6: Preserve, enhance and acquire existing floodplain.

S7: Tree Canopy

Urban forestry is the practice of managing and caring for tree populations in urban settings to improve the built environment. The Goshen Urban Tree Canopy Goal (2019) spelled out an ambitious goal for the City to increase its urban forest from 22% ground cover to 45% by 2045. Similarly, the goal intends to diversify the City's tree species and adapt to climate change.



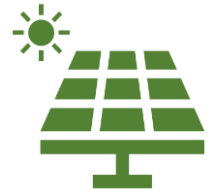
Summary of the program and goals.

Program: Urban Forestry Accounting and Offsetting Program

- Goal 1: Develop an internal policy to protect current city-owned forests.
- Goal 2: Update Urban Tree Canopy Assessment every 5 years.
- Goal 3: Collaborate with landowners to promote long-term protection of forested land.
- Goal 4: Update Tree Ordinance, including policy in support of the Canopy Goal.

S8: Sustainable Energy

Another key component to reducing emissions from local government operations is to invest in sustainable energy sources. Currently, the City acquires most of its energy from NIPSCO. However, NIPSCO's energy production will continue to generate greenhouse gas emissions for 35% of the energy supplied beyond its commitment to convert to clean energy. By making sustainable energy investments, the City can develop greater energy source diversity and increase its long-term sustainability while reducing emissions. Converting to clean energy also can result in cost savings as well.



This would allow the City to directly invest in renewable energy. The addition of approximately 5 megawatts of alternative (solar) energy generation would meet the electricity needs of the City if that electricity could be net metered. By making these investments, the City will reduce emissions and save money.

Summary of the program and goals.

Program: Energy Investments for a Sustainable Community

- Goal 1: Develop a 5-year plan to begin incorporating energy generation at select sites.
- Goal 2: Identify buildings and properties that could be used for renewable energy installation.
- Goal 3: Evaluate investing public funds in local renewable energy projects (such as Solar United Neighbors).

S9: Education

Since education is essential to this plan's ability to achieve its desired results, professional development will play a foundational role in meeting Net Zero Emissions by 2035. Every employee must understand why the City initiated a Climate Action Plan to reduce emissions. Furthermore, voluntary meetings focused on environmental topics can provide an additional opportunity to educate employees and the community. The latter can help reduce emissions and build a more resilient Goshen.

Summary of the program and goals.

Program: Eco-Literacy and Professional Development Program

- Goal 1: Develop and implement employee training on green infrastructure, low-impact development, and climate change mitigation and adaptation practices.
- Goal 2: Involve front-line employees in problem-solving processes related to the reduction of GHG emissions.
- Goal 3: Provide flexible hours for employees to participate in educational programs such as Indiana Master Naturalists, Tree Stewards, etc.

Introduction to Climate Change

Atmospheric Carbon and the Carbon Cycle

Carbon is essential to life on Earth. Carbon is an element that is required to form complex molecules and DNA. All living things and those made from previously living things are all made from carbon, prompting the phrase "carbon life-form." We build homes, power our vehicles, clothe ourselves with carbon; we even eat carbon. Although carbon is integral to life on the planet, the modern human relationship with carbon goes well beyond life-sustaining uses.

Carbon atoms are continually moving from the atmosphere to Earth and then back into the atmosphere in a carbon cycle process. Surface carbon moves in a relatively fast cycle (over a period of decades or centuries); rock-bound and deep-ocean bound carbon moves in a much slower cycle (100 thousands to 100 millions of years). Carbon in the slow cycle is often trapped in the decomposed bodies of ancient lifeforms, and may be transformed into such fossil fuels as coal, oil, and natural gas through a combination of pressure, heat, and epoch-scale periods of time.

Carbon in our atmosphere is part of the surface carbon cycle. It exists in the atmosphere in the form of carbon dioxide. Along with water vapor and other trace gases, carbon dioxide absorbs heat that would otherwise be lost into space, allowing the Earth to hold a steady 60-degree average temperature instead of near zero. It is for this reason that these gases are termed "greenhouse gases" (GHGs) – their ability to insulate and stabilize temperature is similar to the function of a greenhouse. The balance these GHGs provide has enabled the relatively moderate climate of the 20th century and the climate that life on Earth has adapted to over at least the last 800,000 years.

The surface carbon cycle has maintained a balance of 200-300 ppm CO₂ in the atmosphere for the last 800,000 years, based on the measurement of air bubbles trapped in mile-thick [ice cores](#) and other evidence. Even during the ice age cycles of the past one million years, carbon dioxide never exceeded 300 ppm. To add perspective to these measurements, before the industrial revolution began in the mid-1700s, the global average amount of carbon dioxide was about 280 ppm.

The burning of fossil fuels (from the slow carbon cycle) is causing a rapid rise in carbon dioxide in the atmosphere as it is added to the surface carbon cycle. Fossil fuels like coal and oil contain ancient carbon that plants pulled out of the atmosphere through photosynthesis millions of years ago. As humans burn fossil fuels, large amounts of carbon stored in the ground over millions of years are being converted to atmospheric carbon dioxide in a span of a few hundred years. While plants, such as trees, and oceans are able to absorb some of this newly re-introduced carbon dioxide, significant amounts of it concentrate in our atmosphere.

As carbon dioxide concentrations increase in our atmosphere, the greenhouse heat-trapping capacity of the atmosphere also increases. This increase in heat is compounded by the fact that a warmer atmosphere also holds more water vapor. Water vapor further amplifies heat and produces larger precipitation events (<https://www.earthobservatory.nasa.gov/features/CarbonCycle/page1.php>). Large precipitation events can result in flooding.

In 1958, the United States began atmospheric carbon observations at the the Mauna Loa Volcanic Observatory (<https://www.esrl.noaa.gov/gmd/ccgg/trends/mlo.html>). In that year, the global atmospheric carbon dioxide concentration had risen to 315 ppm. In 2014, the global daily average carbon dioxide concentration surpassed

400 ppm for the first time on record. Given the current trends, Climatologists estimate if fossil fuels continue to meet the bulk of global energy demand, atmospheric carbon dioxide concentration is projected to exceed 900 ppm by the end of this century. The graph in Figure 1 shows the carbon dioxide readings over the last 800,000 years.

<https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide>

Current data on carbon dioxide concentrations at the Mauna Loa Volcanic Observatory can be found at www.co2.earth/daily-co2.

CARBON DIOXIDE OVER 800,000 YEARS

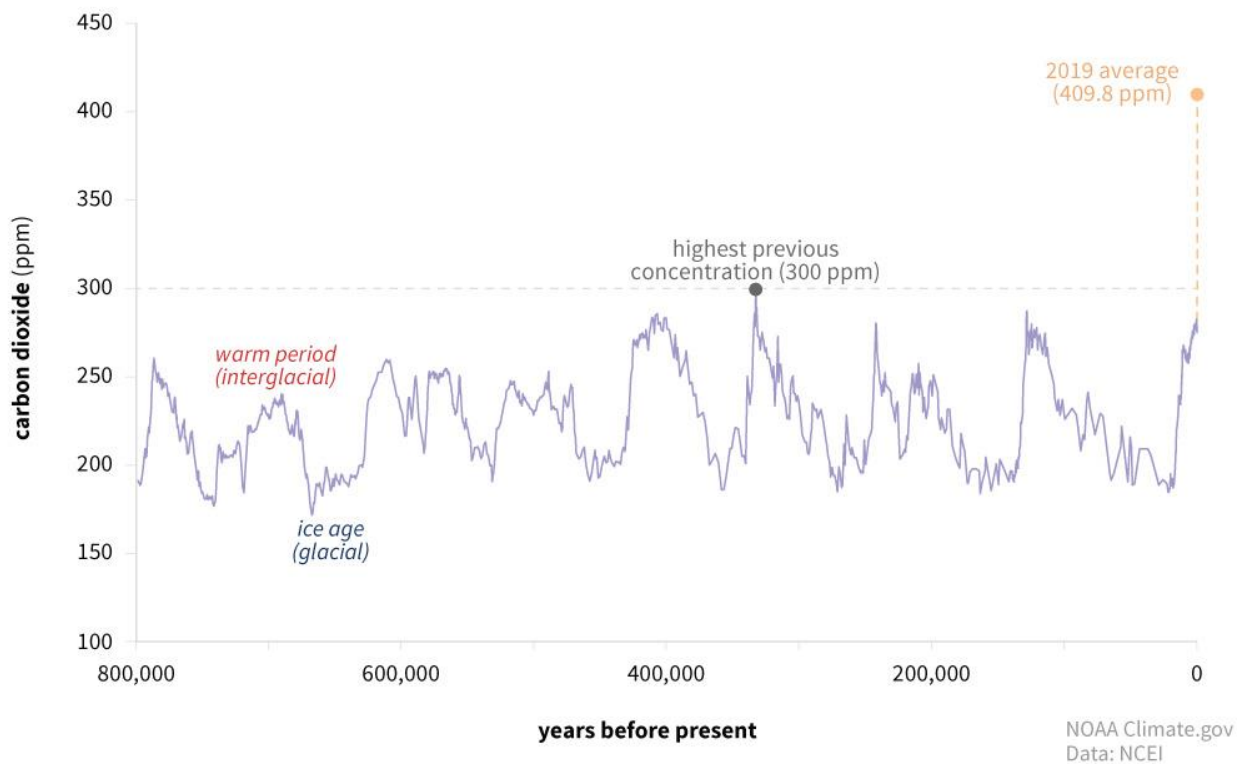


Figure 1 Global atmospheric carbon dioxide concentrations (CO₂) in parts per million (ppm) for the past 800,000 years. The peaks and valleys track ice ages (low CO₂) and warmer interglacials (higher CO₂). During these cycles, CO₂ was never higher than 300 ppm.

The last time the atmospheric CO₂ amounts were as high as 400 was more than 3 million years ago, when the temperature was 3.6°–5.4°F higher than during the pre-industrial era, and sea level was 50–80 feet higher than today.

Goshen Experiences Historic Flooding

In February 2018, after receiving over 5 1/2 inches of rainfall in two days, the Elkhart River rose to 12.53 feet, 6.53 feet above the flood "action" stage. The City of Goshen experienced the largest flood in recorded history, causing several injuries, extensive property damage, and displaced businesses that resulted in a local state of emergency declaration.

While flooding is not new to the City, this event was the worst on record. Rain events in Indiana are becoming heavier and with greater intensity, on average. The reality of increased flooding illustrates just one example of the impacts a changing climate can have on communities across the Midwest.

The graph on page 22 demonstrates the frequency and severity of flooding since 2007.



Figure 2 Pike Street Flooding, February, 2018, Photographer: Andrew Kauffman

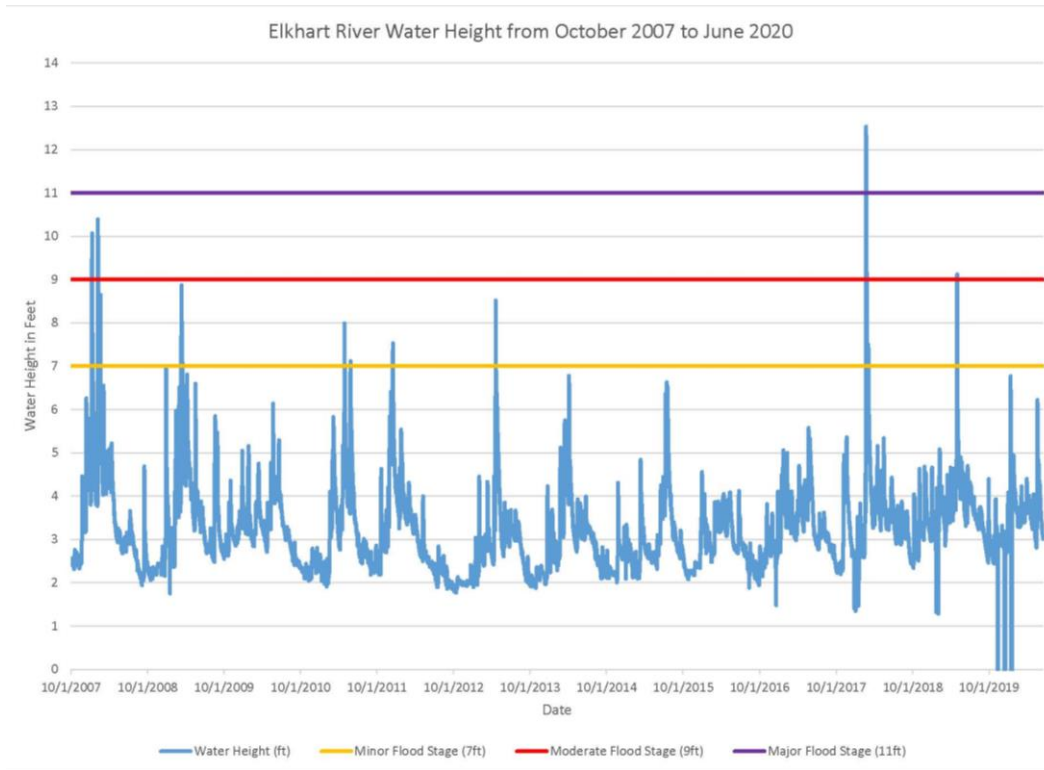
ELKHART RIVER FLOOD STAGES

When the Elkhart River rises above five feet, outlying areas including ditches and streams (including Rock Run Creek, Horn and Leedy Ditch, East Wilden) begin flooding.

The Elkhart River officially reaches flood stage at 6 feet: it overflows its banks to inundate the wetlands between the Goshen Dam pond and the Elkhart River, a large part of Shanklin Park, and Mullet Park.

As the Elkhart River reaches eight feet, Rogers Park and Oakridge Park become inundated. Creekside Estates Mobile Home Park begins to flood; flooding now begins to affect businesses and close roads.

At nine feet, the flooded river cuts off access to Trinity Square businesses, such as Kroger.



LOOKING AT THE TRENDS

Scientists look at annual average temperature and rainfall as an overall indicator of the state of the climate. When you combine temperature measurements for many locations over the course of a year, the values do not fluctuate much from year to year. This method makes it easy to identify extreme years and identify short- and long-term trends.

Figure 3 Water Height and Flood Stages Documented on the Elkhart River 2007-2019

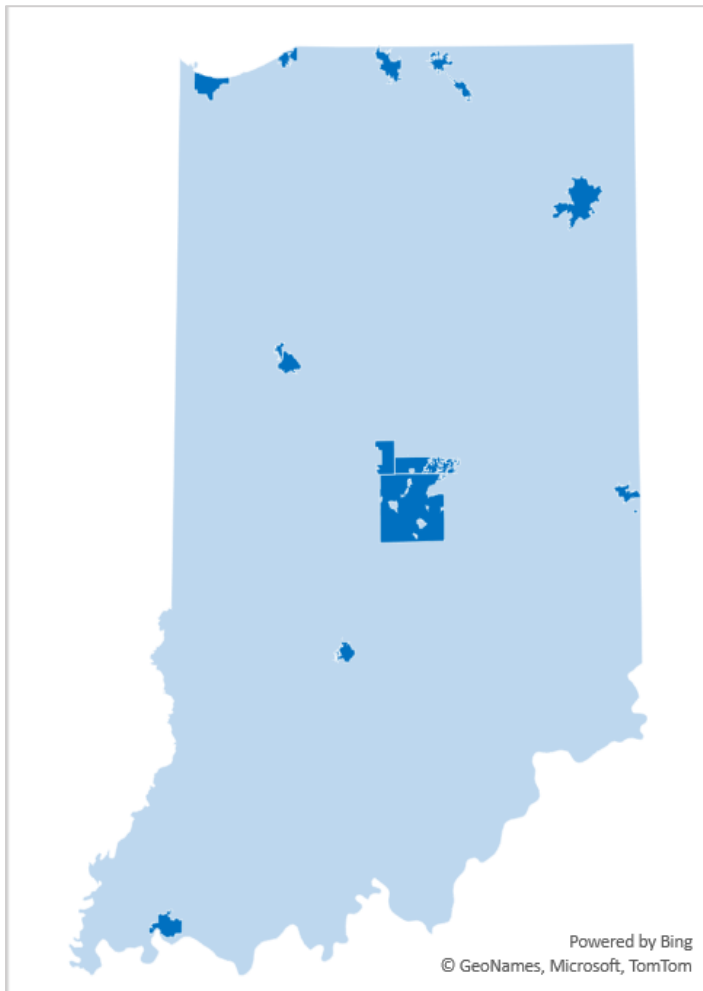
More locally, Elkhart County, where Goshen sits, is expected to see the number of extreme heat events (highs 90°F or greater and nights with lows 68°F or greater) per year increase. Between 1971 and 2000, Elkhart county experienced 21 extreme heat events per year, on average. Yet, by the 2050s, Elkhart County will see between 58 and 72 extreme heat events per year, on average (Environmental Resilience Institute 2020). Further evidence of this is observable by assessing recent years' heat events. For example, in 2019, Goshen experienced 26 extreme heat waves, and in 2020, it experienced at least 29 (National Centers for Environmental Information 2020).

These extreme heat waves have profound impacts. As the Indiana Climate Change Impacts Assessment describes, extreme heat can lead to an increased number of heat-related illnesses, hospitalization, and medical costs. Likewise, extreme heat reduces crop yields, essentially counteracting improved harvests from longer growing seasons. Longer growing seasons "also increase (the) growth of less desirable plants like ragweed and create favorable conditions for some invasive species." Furthermore, reducing cold temperatures means potential disease-carrying mosquitoes, ticks, and forest pests will expand their range and remain active for longer portions of each year (Purdue Climate Change Research Center 2018).

As temperatures increase, the number of extreme precipitation events per decade (daily precipitation of two inches or greater) will increase in Elkhart County from ten events per decade to eleven or twelve per decade by the 2050s (Environmental Resilience Institute 2020). Yet, while this increase alone is not staggering, the change in timing warrants greater attention. The Purdue Climate Change Research Center (2018) finds that "winters and springs are likely to be much wetter by mid-century, while expected changes in summer and fall precipitation are less certain." Extreme precipitation events in late winter and early spring increase Goshen's flood risk when soils are likely saturated or frozen, meaning less water infiltrates the ground and more becomes runoff.

Climate Action Planning and the active reduction of emissions has become a global operation of global proportions in an attempt to avoid the worst of these impacts.

By improving preparedness, planning for impacts, and reducing the emission of heat-trapping gases, the City (referring to the local government) is working toward a resilient future. While the City is a regional leader, it is not alone in its efforts in Indiana. Fifteen other municipalities are working on developing and implementing climate action. Indianapolis, South Bend, Bloomington, and Zionsville have already published climate action plans.



Cities include:

- Bloomington
- Carmel
- Elkhart
- Evansville
- Fishers
- Fort Wayne
- Gary
- Goshen
- Indianapolis
- Lafayette
- Michigan City
- Richmond
- South Bend
- West Lafayette
- Zionsville

Figure 4 Known Indiana Communities Developing or Implementing Climate Action in their Communities 2020

See the Appendix for a discussion of Greenhouse Gas emissions in the United States.

The City of Goshen Takes Action on Climate Change

Soon after the 2018 flood, Mayor Stutsman established the Mayor's Environmental Advisory Committee to guide on environmental issues. Around the same time, Goshen High School students spearheaded the Youth Environmental Resolution (2019-19), which called for a climate action plan. Recognizing a need to focus on climate issues in great detail, the City acted to support the measure, including establishing a new department – the Department of Environmental Resilience – to pioneer this plan.

In the Spring of 2019, by a vote of 6 to 0, the Common Council and Mayor Stutsman passed the non-binding resolution 2019-19 to create and implement a Climate Action Plan by 2021.

In the Summer of 2019, the City partnered with I.U.'s Environmental Resilience Institute to collect and analyze energy consumption data, leading to the first-ever emissions inventory of 2017 of both the community and city government data.

In the fall of 2019, the Mayor, supported by City Department Heads, proposed the Department of Environmental Resilience.

January 2020, the Environmental Resilience Department began operations, with the first major project being to develop a Climate Action Plan for Goshen City Government Operations. Again, the City partnered with I.U.'s Environmental Resilience Institute to work through the process of the creation of a Climate Action Plan.

Throughout 2020, the Environmental Resilience Department worked with other Departments to compile data, update emissions calculations, develop realistic strategies, and sought feedback from employees, Department Heads, the Mayor's Environmental Action Committee, and the I.U. Environmental Resilience Institute to generate a plan for reducing emissions from city operations.

City of Goshen Reductions - Net-zero by 2035

The 2021 City of Goshen Operations Climate Action and Mitigation Plan aims to develop emissions reduction goals projected five years forward to 2026, where tested practices currently exist that will allow the City to reduce emissions in a logical, pragmatic approach. These goals will be the first step in moving toward the overarching goal of net-zero government operations emissions by 2035. The Climate Action Plan will serve as a living document. It will need to be revised and updated to incorporate new strategies as new insights technologies become available and as new practices are adopted.

In developing this plan, the Department of Environmental Resilience compiled many forms of data (such as energy and fuel use records) with other Departments' assistance. It then used real-world scenarios to develop strategies to reduce greenhouse gases in City operations.

Where strategies exist to reduce greenhouse gases, the Environmental Resilience Department has proposed a proportionate goal as a part of a multi-step process to attain net-zero emissions for City operations by 2035. In some cases, there were no obvious or proven solutions to reducing GHGs; therefore, more in-depth review will be needed.

The Department of Environmental Resilience is committed to supporting other Departments through this process. The Department has established target goals for multiple categories that will be important to achieve if the City is to reach net-zero by 2035. It is important to note that ***this document does not dictate the process to be implemented to reach the goal***. Instead, the document outlines possible paths City Departments can take in choosing the best routes to GHG emissions reduction. The Mayor's support and Goshen City Council funding approval will be needed to meet each Department's goals. Support from elected officials will be critical as City policies, practices, and standards are adapted to meet the Climate Action Plan's goals.

Climate Action Plan Inventory

The Climate Action Plan is being written with the benefit of having two separate inventories in two different years. Having two inventories has enabled both comparison and improvement based on experience. The Department had the opportunity to learn and improve the second inventory and set up the data for long-term monitoring.

2017 Inventory

The 2017 inventory of Goshen Government Operations was the first study of the Goshen City government's emissions. It measured 11,136 metric tons of carbon dioxide equivalents (MTCO₂e). Carbon Dioxide Equivalent includes all greenhouse gases but reports their warming potential in terms of carbon dioxide, the most common greenhouse gas. Table 1 illustrates the emissions sectors and activities. Of this, total electricity use contributed 73 percent of emissions, natural gas at 9 percent, emissions from the vehicle fleet in gasoline and diesel use totaled 11 percent, and wastewater treatment effluent comprised the remaining 7 percent of emissions. The determination was made to include solid waste emissions, a contracted service that includes Goshen residential waste, in the Community inventory. The inventory did not include emissions from the environmental center or flared methane at the wastewater treatment facility.

The 2017 emissions inventory provided a solid starting point for identifying local government emissions; though it did not provide a detailed accounting of energy usage over time, energy costs, or a system to continue to track both emissions and costs, it laid the foundation for building an even more robust inventory.

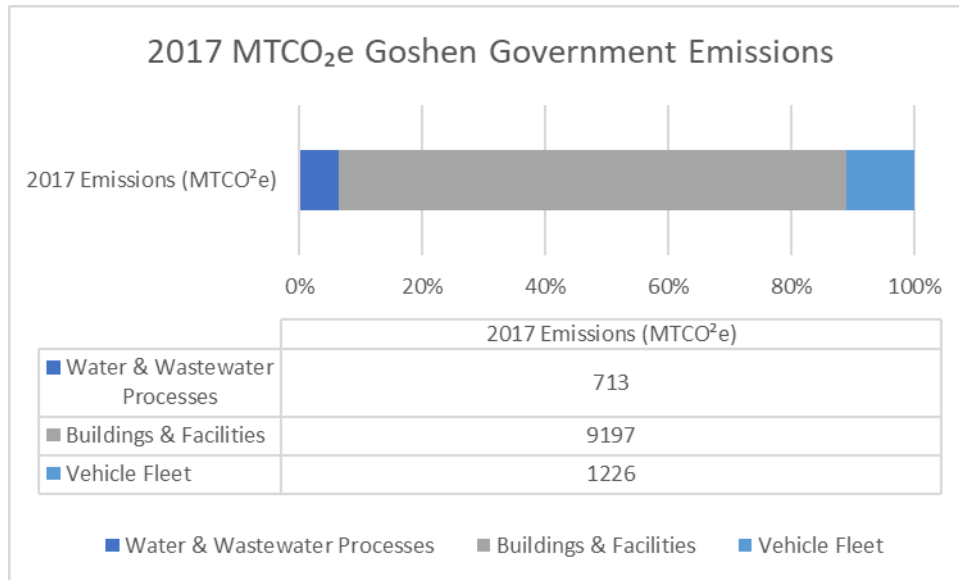


Figure 5 Goshen's 2017 Government Emissions Inventory: 11,136 MTCO₂e

2019 Inventory

In recognizing the limitations of the information inputs and outputs of that 2017 Inventory and understanding the need to begin tracking progress, the City took a more in-depth approach to characterize the emissions in 2019. That effort yielded greater depth and clarity resulting in a total emissions count of 9,396 MTCO₂e.

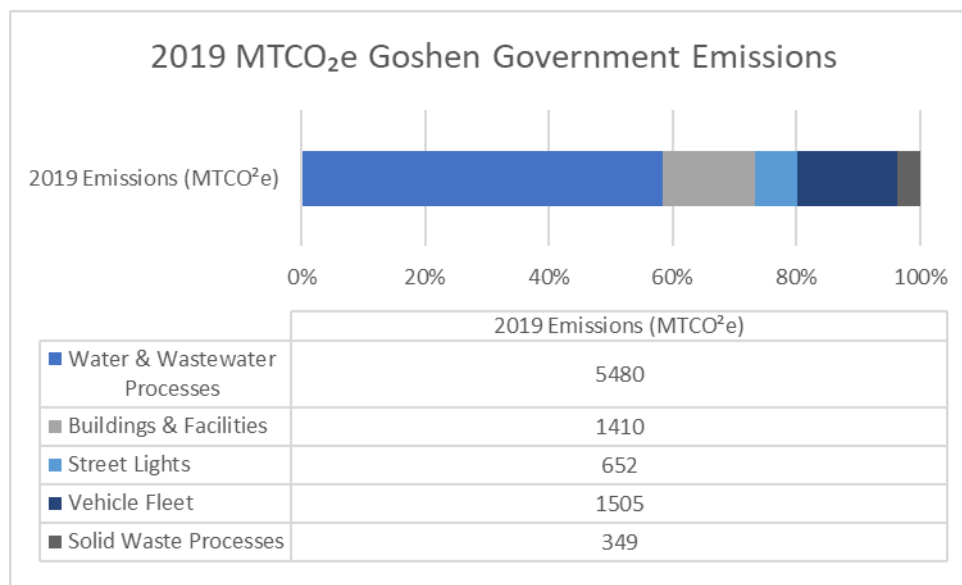


Figure 6 Goshen's 2019 Government Emissions Inventory: 9,396 MTCO₂e

This inventory includes an accounting of all City energy accounts and purchases and tracking of materials and services and assets that contribute to emissions both positive and negative. This allowed the identification of emissions by energy type, source, user, and expenses and provided a way to track each variable.

Between the two inventories, there was a difference in total emissions. A significant reduction in emissions of 1,739 MTCO₂e is recorded over the two inventory years. This reduction is due to NIPSCO's efforts to decarbonize

their power generation by increasing their percentage of clean energy over coal power plants. Other more minor differences occurred when categorizing emissions and choosing which emissions should be included in the survey for *Government Operations* versus those that would be considered *Community* emissions.

In both the 2017 and 2019 inventories, the City followed the Local Government Protocol to quantify and report greenhouse gas emissions developed in partnership and adopted by the California Air Resources Board, California Climate Action Registry, ICLEI Local Governments for Sustainability, and the Climate Registry. The protocol provides a structure for determining which GHG emissions would be characterized as “Government Operations” and which would be “Community” emissions.

Emissions Inventory Breakdown

The City spends approximately \$1.8 million annually on energy; this purchase generated approximately 9,396 MTCO_{2e} in 2019. That includes electricity and natural gas utilized in city facilities (Buildings and Facilities – 15%), the processing, distribution, and collection of water and wastewater (Water Utility and Wastewater Utility combined - 58%), fuel for operations (Vehicle Fleet - 16%), composting operations at the Goshen Environmental Center (Environmental Center - 4%), and Electricity for street and parking lights (Street Lights - 7%).

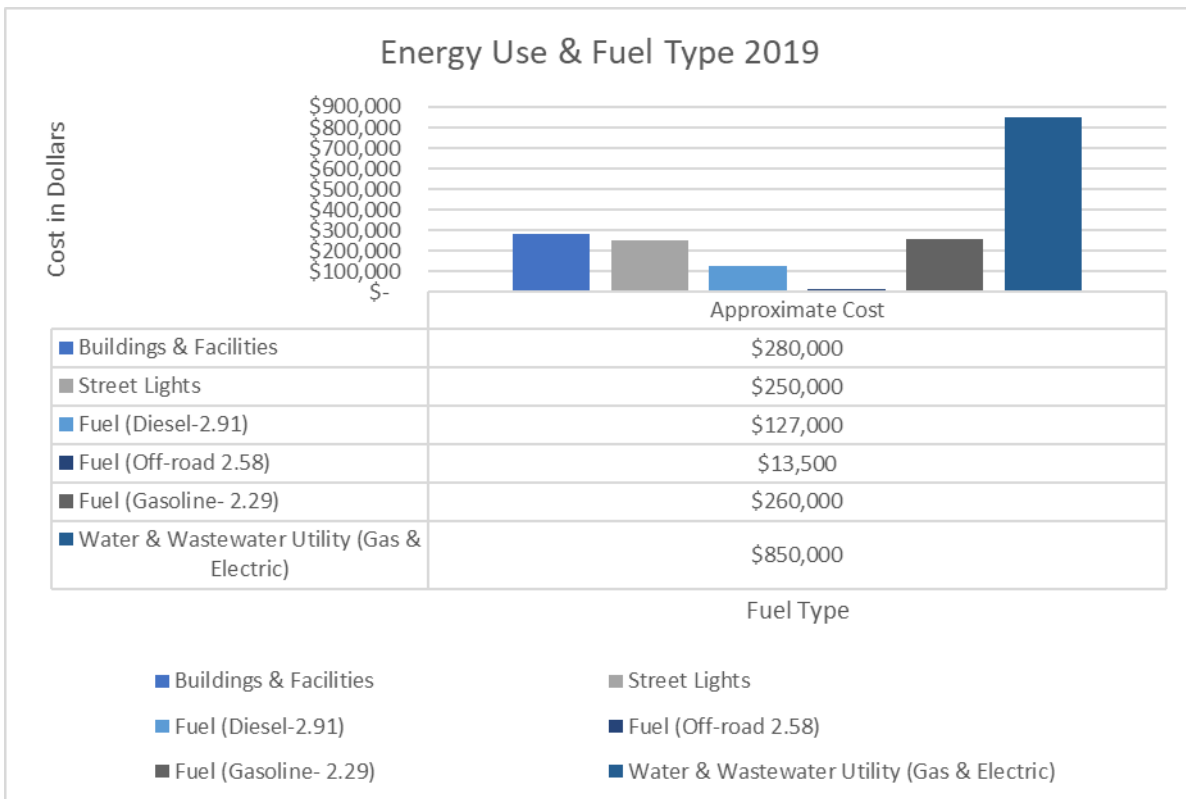


Figure 7 Goshen Government Energy Use and Fuel Type, 2019 Emissions Inventory

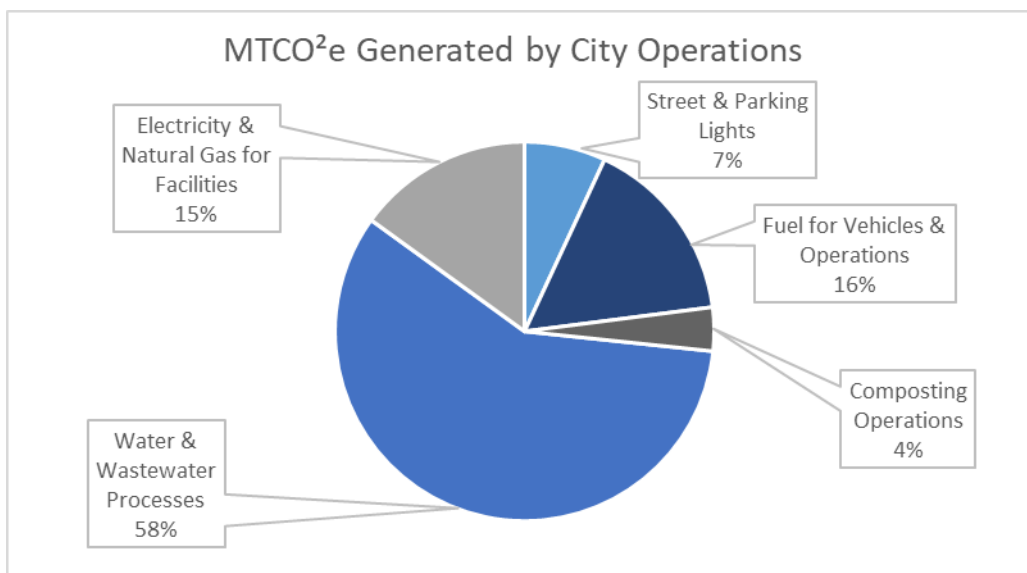


Figure 8 Percentage of MTCO₂e Generated by City Operations, 2019 Emissions Inventory

Emissions Forecast

The 2019 inventory was then used to create a Business as Usual (BAU) graph to trend the GHG emissions for the City if the City did nothing to reduce GHG emissions. The BAU graph accounts for significant GHG reductions that NIPSCO is undertaking as it converts to green power generation. That reduction affects GHG emissions until 2028. As a part of standard operations, the City's energy consumption and GHG emissions do not stay constant. Factors such as growth, changing temperatures, changing city policies all affect GHG emission trends. The electricity consumption, City Fleet, and the Environmental Center were all increased by 2% per year to reflect these trends. The natural gas consumption has remained relatively constant and was not increased in the BAU model. Based on NIPSCO's reductions and the City's energy trends, the lowest GHG emissions will occur in 2027 and will begin trending upward.

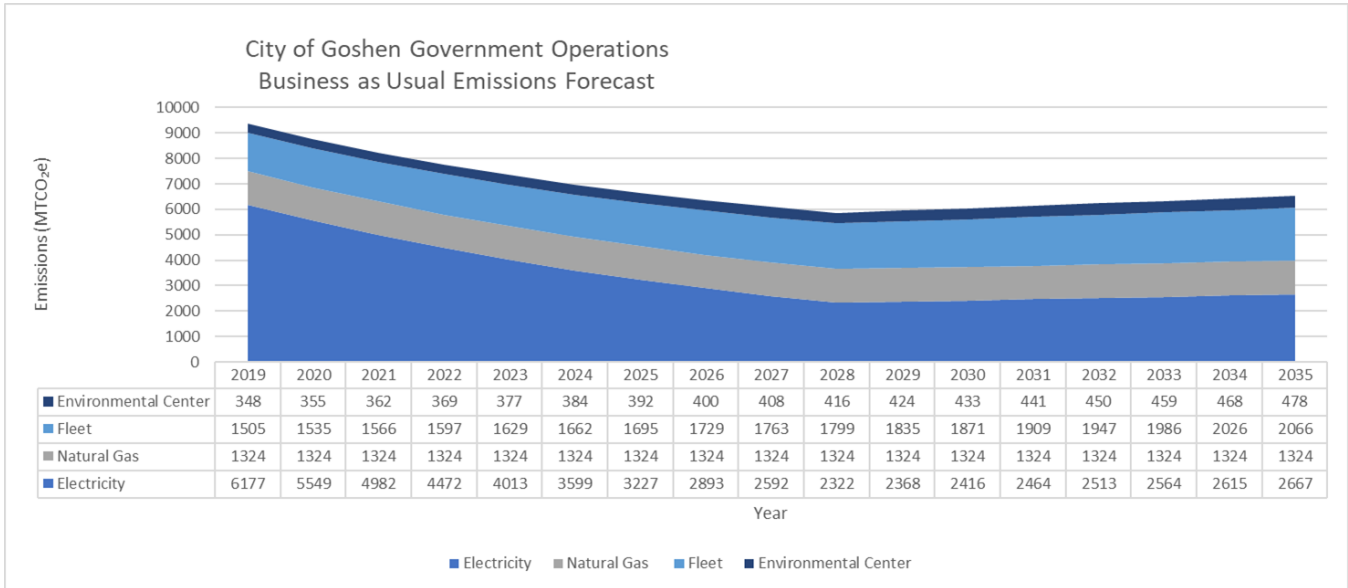


Figure 9 Business as Usual Emissions Forecast for Goshen City Operations, based on 2019 Emissions Inventory.

If NIPSCO’s decarbonization of electrical power is evaluated without increases due to BAU, NIPSCO will decrease GHG emissions from electricity usage from 6,177 MTCO₂e in 2019 to 1,968 MTCO₂e in 2028. That is a 68% decline in GHG emissions from electricity. This number does not take into account the growth forecast model.

A second forecast was created taking into account proposed 2026 benchmark reductions in this Climate Action Plan. These benchmarks are comprised of a 30% reduction in electric consumption in buildings, 20% reduction in natural gas in buildings, and 25% reduction in gasoline consumption across the vehicle fleet. The current wastewater energy efficiencies under construction now are factored in also as a 2022 drop in electricity. The NIPSCO emissions reductions are also factored into this forecast.

Similar to the BAU graph, emissions in the second forecast begin to rise again after 2028. This indicates that further reductions will need to be in place by or before that date in order to remain on schedule for a target of zero emissions by 2035.

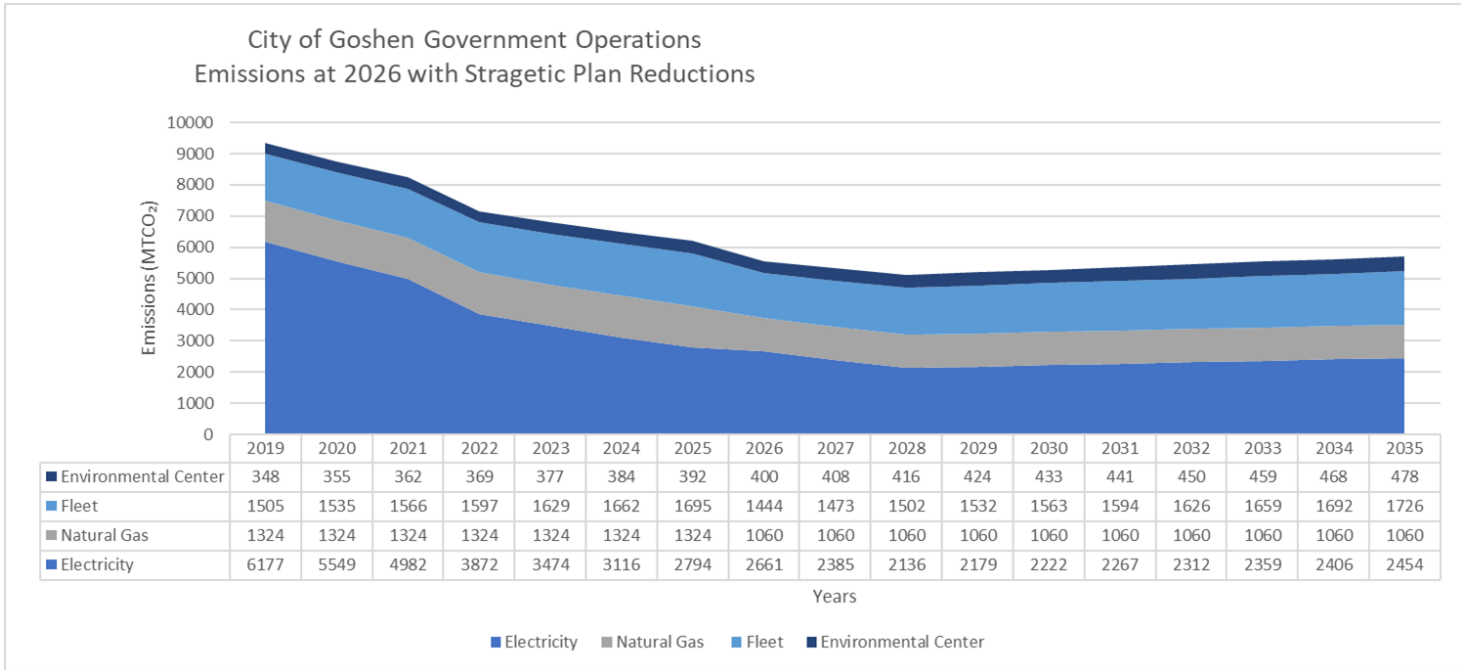


Figure 10 Goshen City Operations Emissions Forecast with Strategic Reductions by 2026.

Mitigation and Adaptation

In the context of Climate Change, mitigation and adaptation are terms which refer to two larger sets of proactive responses. Each of them is related to the other, and often blend or borrow practices from the other; nevertheless it can be helpful to understand the basic distinction between the two concepts for the sake of organizing meaningful action.

Mitigation

Adaptation

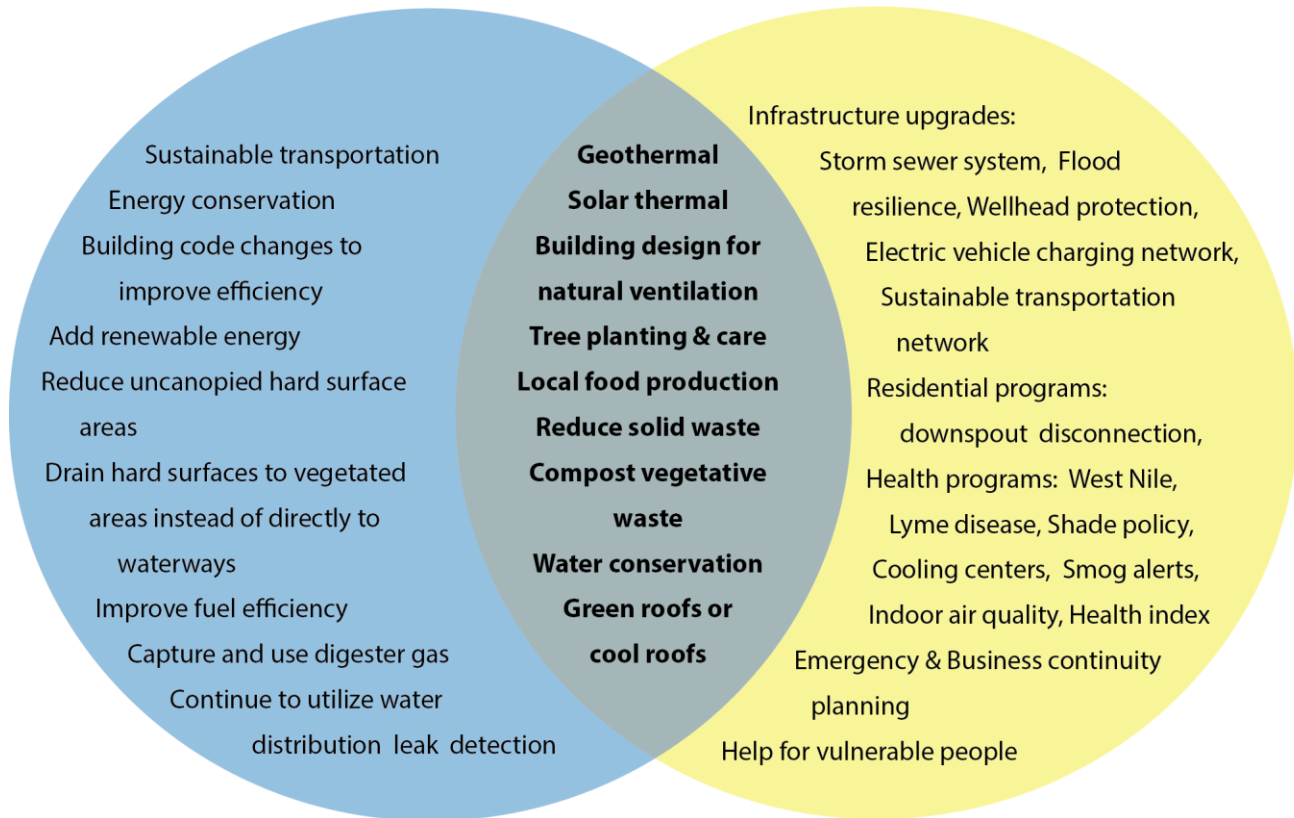


Figure 11 Diagram Illustrating the Intersection of Mitigation and Adaptation Strategies

Mitigation is action aimed at reducing the impacts of climate change. The primary impacts of climate change are increases in temperature and increasingly unpredictable precipitation – periods of heavy precipitation resulting in possible flood scenarios, and periods of drought. Mitigative efforts seek to directly and indirectly reduce the greenhouse gas emissions that human activity produces, which are causing changes in our climate, resulting in temperature and precipitation impacts. Mitigation is the adoption of technologies and behaviors that reduce greenhouse gas emissions. Sustainable energy production through solar and wind generation is mitigation; driving an electric vehicle is mitigation; refusing plastic packaging is mitigation. These are just a few examples of technologies and behaviors that mitigate climate change impacts.

Adaptation refers to actions which are intended to help us live with the impacts of climate change. Since a certain amount of temperature rise is projected to manifest over the coming decades due to the large amount of greenhouse gas emissions already concentrated in our atmosphere, we can predict that our cities and towns will become warmer than in the past, our waterways will experience more flooding, and there will be changes in the flora and fauna that live in our ecosystems. Adaptive actions help us prepare for these changes by recognizing that old patterns and habits may no longer serve us well. Capturing and holding stormwater on site is adaptation; identifying community cooling centers is adaptation; low water-input landscaping (xeriscaping) is adaptation; moving structures out of floodways is adaptation. These are a few examples of actions that help us adapt to climate change impacts.

Some actions blend mitigation and adaptation very seamlessly. In order to cool urban settings, tree planting, from homes and neighborhoods to parking lots and commercial/industrial districts, is an important

adaptive strategy. But trees also double as a mitigation strategy because of their ability to sequester carbon dioxide, removing it from the atmosphere. Properly insulating buildings so that they use less energy to stay warm in the winter and cool in the summer is an obvious way to mitigate emissions. But insulating is also a critical adaptive strategy, helping to manage life with rising summer temperatures.

Most of the proposed strategies in Goshen's government operations climate action plan are intended to reduce emissions toward the stated goal of net-zero emissions by 2035, and are therefore mitigative. There are some which are clearly adaptive as well, and some which blend both adaptation and mitigation, such as the Canopy Goal and flood preparation. By identifying and adopting both mitigation and adaptation strategies, the climate action plan strengthens our current and future resilience.

Emissions Reductions Strategies

The work of inventorying our energy consumption and the associated emissions, and then proposing reductions against projected consumption is sobering. The Climate Action Plan's stated 5-year benchmark goals for 2026 (30% reduction of electricity consumption in buildings, 20% reduction in natural gas consumption in buildings, and 25% reduction in gasoline consumption by the City's fleet) will net only about 746 fewer MTCO₂e than a do-nothing, business-as-usual approach. With the proposed reductions, in addition to the reduced emissions from NIPSCO's electric generation, the overall emissions reduction in government operations is about 45% – from 9,396 MTCO₂e to 5,114 MTCO₂e – by 2028.

On the surface this looks encouraging. However, NIPSCO's reductions make up the lion's share of these decreases (3,536 MTCO₂e) over the same period. Furthermore, looking at the projections, the City's emissions begin to climb again by 2029 in spite of the first round of reductions. Taken together, this means that while the initial proposals are good, they are not nearly good enough to set the City on the path to the larger stated goal of net-zero emissions by 2035. Solar energy production is the best bet – and it is a good one – to reduce operational electric emissions in a significantly meaningful way. The technology exists (along with the solar hours), as well as the facilities (Wastewater Treatment Plant) which could receive solar installations that result in critical electric emissions reductions and long-term cost-savings. Solar energy is not a silver bullet, but investing in solar has never been more profitable.

The emissions reductions strategies which follow are challenging. They include the initial 2026 benchmarks. They also include strategies which can – if implemented with sustained effort, cooperation and funding, not to mention careful monitoring – propel the City toward zero emissions. This work comes with a hefty financial cost. If the City understands that this is the right thing to do, it will make the adjustments to operations, to behaviors, and to culture in order to meet the challenge. Understanding the necessity of the work is the essential ingredient.

2021 Criteria for Strategies

The Climate Action Plan strategies presented for implementation in this document are designed to meet some or all of the following criteria:

1. **Develop reduction targets for emissions categories** where there is a clear path for success through technology or behavior change, relative ease of implementation, positive cost-benefit ratio, and presumption of City and personnel discipline to accomplish the work.
2. **Determine emissions categories that will require additional data** and develop a timeline for accumulating the data and working to create site-specific strategies and their corresponding cost-benefit ratio.
3. **Determine which emissions categories or strategies should be re-evaluated later** due to unclear paths to success. These include lack of available technology, current projection yields high cost and low benefit, perceived difficulty in developing buy-in for behavior changes, or other obstacles.
4. **Identify strategies to anticipate and lessen local climate change impacts** on people, living things, properties, and operations based on information from Indiana's Universities and Climate Change scientists.

Strategy 1: Energy Management of Buildings and Facilities

Energy Management is a fundamental component of all climate action plans. The City of Goshen utilizes electricity and natural gas for heating and cooling buildings, powering lights, equipment, computers, and the processes involved with drinking water treatment and distribution and wastewater collection and treatment. In 2019, the City used almost 2.5 million kWh of electricity powering city facilities and outdoor lighting, such as street lights and parking lights. That equated to emissions totaling 1,421.7 MTCO₂. Approximately fifteen percent of those emissions were generated by City facilities, ten percent by street lights, and seventy-five percent by utility processes.

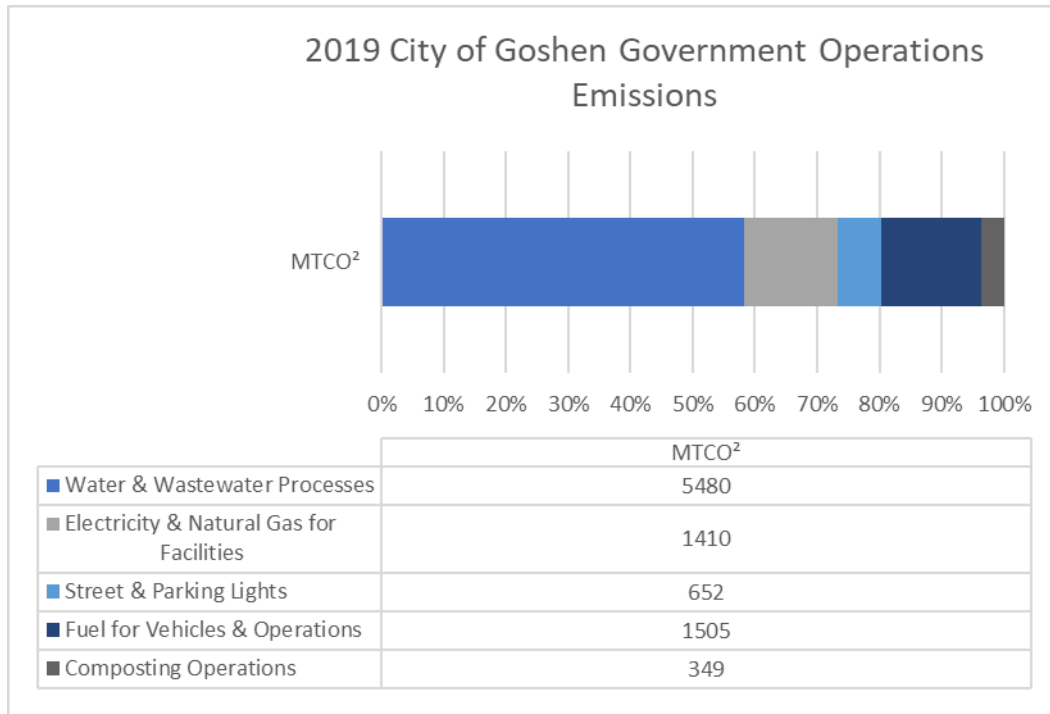


Figure 12 Goshen's 2019 Government Emissions Inventory: 9,396 MTCO₂e

As energy management of facilities and street lights are entirely dissimilar to the utility requirements, this energy management section will focus solely on facilities and street lighting. The Climate Action Plan will discuss utility energy consumption in a separate section.

A 2015 energy report conducted by the U.S. Department of Energy (DOE) concluded that commercial buildings could reduce their energy consumption by twenty-one (21) percent if they employed all "energy star" equipment. They could reduce their consumption by forty-seven (47) percent if buildings utilized best and cost-effective technologies and fifty-nine (59) percent savings if all equipment operating at its theoretical efficiency limit.

Some city buildings have already had some upgrades completed, such as Central Garage, the Annex Building, City Hall, and Central Fire Station; however, building efficiency in *almost* all cases can be improved. Reductions in energy consumption result in cost savings and reduced emissions. The goal for emissions reduction in City

buildings is thirty (30) percent in electricity and a twenty (20) percent in natural gas by 2026. The savings from these reductions would result in upwards of \$65,000 annually. A case study on the Reith Center can be found in the Appendix.

Climate Action Plan Criteria:

1. Determine emissions categories that will require additional data.
2. Determine which emissions categories or strategies should be re-evaluated.
3. Identify strategies to anticipate and lessen local climate change impacts.


Co-Benefits																	
Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Time line	Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality	Improve Government Resilience	Suggested Responsibility	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes		
Energy Management 	Increase Efficiency of Building Systems and Technologies and Reduce resource consumption (energy & water) Electricity 30%, Natural Gas 20%, Water 30% by 2026.	1.1	Perform energy consumption and water audit within each building/facility to determine the efficiency of components, appliances, mechanicals, envelope tightness, and evaluate workspace concerns. Generate a work plan for improvements to maximize return on investments based on available budgets and working toward Climate Action Plan goals.	1st - 3rd Years	✓	✓			✓	Environmental Resilience is compiling information from a multi-department effort (Engineering, Building, Etc..) to provide coordination, develop reports, summarize presented strategies, track progress. A management team could provide overall financial review and leadership toward the adoption of practices.	variable	Regular annual maintenance	\$65,000 +	Goshen Comprehensive Plan 2025. C-1: Provide and Maintain Excellent Public Facilities, NE-8: Encourage Sustainable Living and Business Practices, E-6: Encourage business practices that have positive social impacts on the community, E-7: Encourage Sustainable Living and Business Practices,	About 30% of a home's heating energy is lost through windows. In cooling seasons, about 76% of sunlight that falls on standard double-pane windows enters to become heat. https://www.blueaccounting.org/article/adaptive-management-and-collaborative-adaptive-management .		
		1.2	Develop mechanisms for all departments and/or building managers to be aware of and responsible for energy consumption and resulting costs.	2nd to 4th years	✓				✓		Staff Time	Staff Time					
		1.3	Develop a heating and cooling policy relevant to each specific building. Replace thermostats with "smart" thermostats (appropriately managed) where applicable.	2nd - 3rd Years	✓					✓		Staff Time	Staff Time		Can save up to 10% on energy costs		Thermostats that adjust to use less cooling and heating when buildings are empty can save 10% of energy costs
		1.4	Establish city-wide employee teams will participate with feedback and champion improvements to their workplace operations.	Quarterly	✓	✓				✓	Environmental Resilience with assistance from all Departments	Staff Time	Staff Time				
		1.5	Evaluate landscaping around city buildings and, where needed, develop a plan to co-plant fast-growing with slow-growing trees (tree shepherding) to maximize shade production to meet canopy goals and realize energy savings.	1st Year - On-going	✓	✓	✓	✓	✓		Environmental Resilience in consultation with Facility Managers	Minimal	Regular annual maintenance		Can save up to 5-50% on summer cooling costs		Building cooling expenses can be reduced by 5-50% where a tree canopy and smart landscaping design is implemented (energy.gov)
	1.6	Design new city facilities using the most efficient building & energy systems, 30 year (or the life of the specific accessory) payback period to prevent the future costs associated with retrofits. Design and construct to easily allow for the addition of solar systems at a later date. Model environmental resilience.	Immediate	✓	✓			✓	✓	Engineering / Environmental Resilience	Designed with a 30 year or less payback						
	1.7	Evaluate and adopt, if & where feasible, alternative work schedules to improve facility efficiency, including open hours, workplace schedules, in-person and online services to balance openness, accessibility, efficiency, costs, etc. Explore remote-work options and remove barriers to remote-work where needed, such as digitizing records.	Annual Review	✓	✓				✓	All Departments	undetermined	undetermined	undetermined				

Figure 13 Energy Management Strategies

Strategy 2: Solid Waste Management

The City of Goshen generates two primary forms of solid waste: trash generated by City employees throughout the workday and green waste (leaves and brush) picked up curbside and composted or chipped at the Goshen Environmental Center. The decomposition of these products either in a landfill or in a composting pile generates carbon dioxide.

The emissions generated from operations at the Goshen Environmental Center total 349 MTCO₂e. These emissions are a natural process of decomposition. As any living thing decomposes it will generate carbon dioxide. The reason that these emissions are included in the CAP is that the material is quantified and placed on public property where it is stored and turned as it develops into a viable product for reuse.

The waste from City operations is co-mingled with the community's residential waste when picked up and taken to the landfill. As the owner, the Elkhart County Landfill reports the emissions from landfilled waste annually to the Indiana Department of Environmental Management (IDEM).

The City has significant influence over the community's waste generation by managing the contract for waste pickup, prompting the Environmental Resilience Department to include the solid waste data in this report. However, the overall emissions count is not included as a part of the overall Government Operations emissions. This area of emissions is significant, totaling 8,292 MTCO₂e and will be addressed in both the Government Operations Climate Action Plan and a Community Climate Action Plan should that be developed in the future.

Community Residential Solid Waste

In 2019, the contracted waste hauler picked up 11,824 tons of solid waste from approximately 10,600 households and from some government operations. It is estimated that approximately 3.7% of solid waste was due to City Operations. City operations generated approximately 425 tons, and residents generated 11,398 tons, over one ton per household (ton equals 2,000 lbs). Disposal costs were \$1.3 million for 2019, up from \$809,000 in 2015, with a 15% increase in tonnage per household during that time.

Solid Waste Statistics City of Goshen											
Year	*Residential Households	Total Tons per Year Collected	Charges per ton		Total Charges per year	Total Tons Broken down by Customer -See tabs			lbs per household per year	\$ per household per year	Percentage change in weight by per household
			Pickup and Transport	Landfill Tipping Fees		Utility Tons	Civil City Tons	Residential Tons			
2021	10706										
2020	10646	12694	\$ 92.15	\$ 18.60	\$ 1,405,861	203	254	12,237	2,299	\$ 127.17	7%
2019	10600	11824	\$ 92.15	\$ 18.60	\$ 1,309,508	189	236	11,398	2,151	\$ 118.97	15%
2018	10553	10242	\$ 92.15	\$ 18.60	\$ 1,134,302	164	205	9,873	1,871	\$ 103.51	-1%
2017	10513	10377	\$ 62.99	\$ 18.60	\$ 847,329	166	208	10,003	1,903	\$ 77.62	4%
2016	10473	9937	\$ 62.99	\$ 18.60	\$ 810,792	159	199	9,579	1,829	\$ 74.55	0%
2015	10433	9924	\$ 62.99	\$ 18.60	\$ 809,745	159	198	9,567	1,834	\$ 74.74	3%
2014	10393	9602	\$ 62.99	\$ 18.60	\$ 783,451	154	192	9,256	1,781	\$ 72.59	2%
2013	8710	9428	\$ 62.99	\$ 18.60	\$ 769,253	151	189	9,089	2,087	\$ 85.05	

Figure 14 Solid Waste Statistics, City of Goshen, 2013-2021

Some material is being diverted from the landfill. There is five drop-off recycling centers in Goshen placed there by the Elkhart County

Currently approximately 1,140 households pay for private curbside recycling. Those households capture approximately 456,000 pounds of material annually that can be sold and reused as a part of the local economy. Based on national statistics and the number of local dropoff sites, an additional ten percent of households also may be contributing to dropoff recycling sites diverting an additional 425,000 pounds, making the total solid waste diverted approximately 881,000 pounds. This is an important number when looking at the total landfilled amount of 12,694 tons (25,388,000 pounds) in 2020. If the solid waste numbers are combined, the Goshen community reclaimed just 3.4% of the material entering the landfill. Typical municipal residential solid waste is 48% recyclable or 12,186,240 lbs of the possible 25,388,000 pounds. Reducing solid waste entering the landfill by 48% would save almost \$675,000 and divert 12,186,240 pounds of material into the local and regional economy. It would also cut solid waste emissions in half.

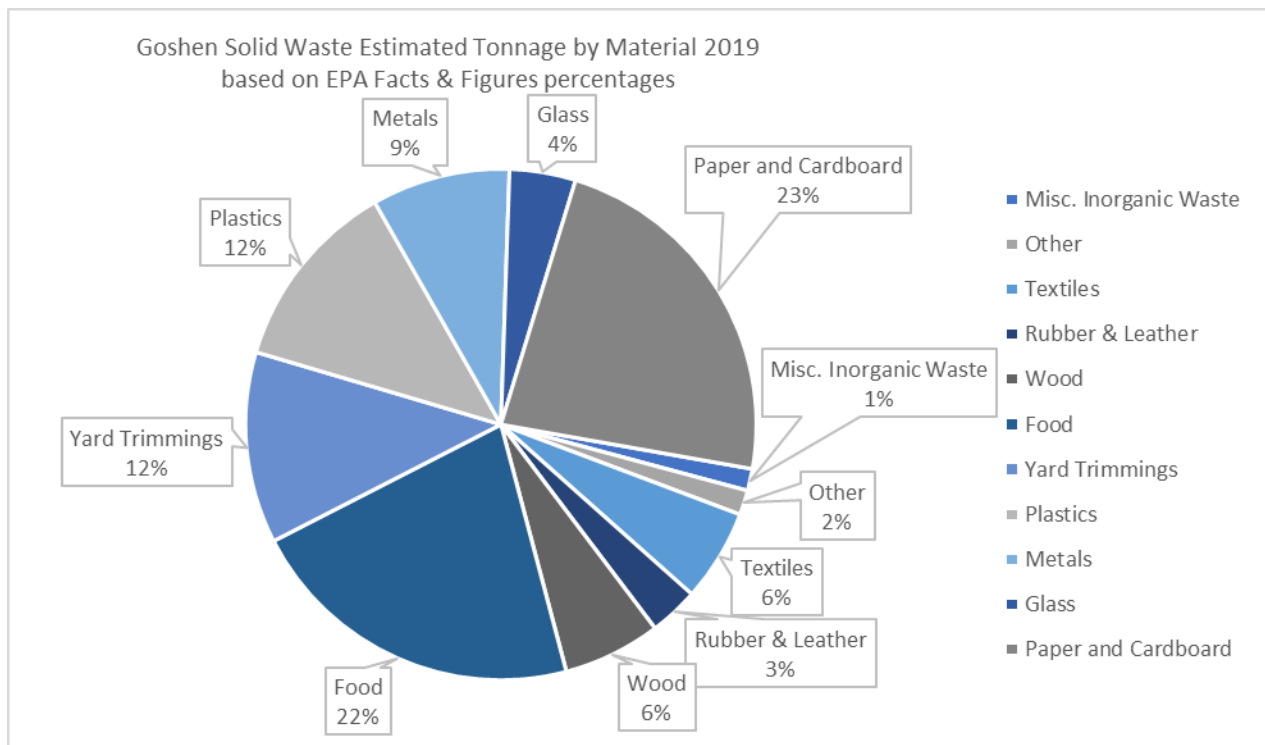


Figure 15 City of Goshen Estimated Solid Waste Tonnage by Material, 2019

City Operations Solid Waste Goals

The City is working on specific goals to reduce the trash in City operations. Solid waste characterization and audit studies will need to be developed for City operations in the future but are not yet prioritized in the specified strategies due to a lack of poor existing metrics.

Also, the City will be developing a public education campaign on the topic of solid waste. The campaign will inform on how solid waste impacts our community and our local budget. It will also highlight recycling is an essential part of our local economy that not only diverts material from the landfill but reclaims a valued commodity for use in local and regional businesses, supporting jobs and products made in Indiana. The education campaign will also highlight local businesses that provide products that reduce waste, provide less packaging, and open up new choices for persons who want to reduce their volume of landfilled trash.

Climate Action Plan Criteria:

1. Determine emissions categories that will require additional data.
2. Determine which emissions categories or strategies should be re-evaluated.
3. Identify strategies to anticipate and lessen local climate change impacts.


Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Timeline	Co-Benefits				Suggested Responsibility	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes
					Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality						
Solid Waste Management 	Review practices and promote innovation to reduce GHG when providing services for Green Waste.	2.1	Review Green Waste processes and methods and look for ways to innovate that will reduce GHGs and improve systems, including employee communication.	Annual Review	✓				✓	Engineering and Street Departments	to be determined	to be determined	to be determined	Goshen Comprehensive Plan 2025, C-8 Efficient & Effective Street Department Services, NE-7 Use best practices to reduce and dispose of solid waste.
		2.2	Stock & increase the use of reusable dishware & silverware. Buy 20% post-consumer waste or greater when possible (no Styrofoam or non-biodegradable products).	1st Year - On-going	✓			✓	✓	Could be someone in the building or a team that looks to continue to improve practices around recycling. Maybe a team would meet quarterly.	Minimal	Minimal	Reduction of solid waste entering landfill.	Goshen Comprehensive Plan 2025, NE-7
		2.3	Evaluate (survey need) and implement compost (organics waste) opportunities across applicable municipal departments.	2nd Year - On-going	✓			✓	✓		Minimal	Minimal		
		2.4	Develop and adopt a city-wide policy that outlines waste management protocols for government operations, including regular waste and "universal" (e-waste, fluorescent bulbs, etc.) waste.	1st Year	✓	✓	✓	✓	✓	Invite multi-department participation in brainstorming and policy development to determine City needs and values.	Creation of Training materials or posters	Minimal	indirect savings	It is illegal to send "universal" waste to the landfill. https://www.in.gov/idem/recycle/2384.htm
		2.5	Evaluate consumable products by Financial and Environmental CBAs, develop an "approved" list used for most purchasing, and streamline on a city-wide basis.	2nd Year	✓	✓	✓	✓	✓	Would require centralized purchasing, lack storage and dedicated staff.	unknown	to be determined		
		2.6	Evaluate current waste removal and recycling contracts regarding best management practices.	2nd Year - On-going	✓				✓		to be determined	to be determined	to be determined	

Figure 16 Solid Waste Management Strategies

Strategy 3: Sustainable Transportation

The 2019 inventory of Goshen's governmental operations reveals approximately sixteen percent of the City's emissions from the direct burning of fossil fuels, gasoline, diesel, and off-road diesel in transportation and equipment. The total emissions from fossil fuel combustion in governmental operations are second only to the emissions generated in water and wastewater processing operations (Figure 2 2019 Goshen MTCO₂e Emissions Generated).

The City's vehicle fleet includes passenger vehicles such as sedans and SUVs, light-duty and heavy-duty trucks, and off-road equipment such as loaders, mowers, and generators. While acknowledging that this is a substantial source of emissions, it is critical to understand that the City's work necessitates vehicles and equipment. Approaching net-zero will require a plan that reduces fleet emissions and still maintain the City services. It will also require additional regulation and substantial investment by the vehicle industry. Fuel efficiency is non-existent in heavy-duty options. This will prohibit reducing emissions in the vehicles classified as heavy-duty and critical to the City's operations.

There is a complete fuel analysis located in the Appendix.

The City used approximately 162,000 gallons of fuel in 2019. Gasoline made up the majority of those gallons at sixty-seven percent. Diesel use was thirty percent, and off-road diesel was just three percent.

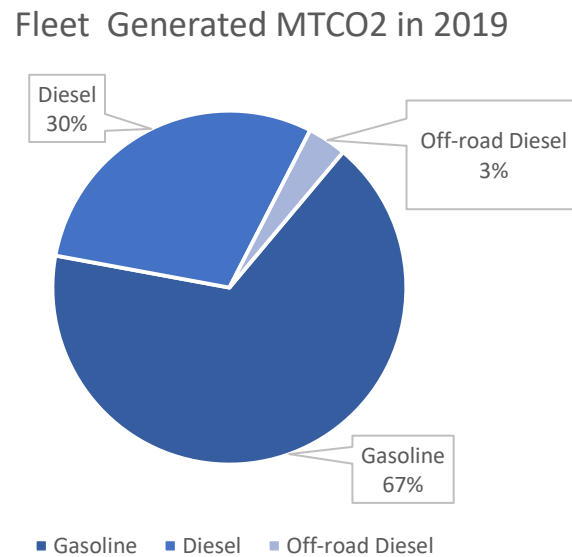


Figure 18 Fleet Emissions by Fuel Type, 2019

The gasoline-powered vehicles consist of sedans, SUVs, light-duty trucks (F150s), and heavy-duty trucks (F250s, F350s, F550s). The diesel-powered vehicles consist of heavy-duty trucks (fire trucks, ambulances, International and Volvo trucks, sewage vacuum trucks, sweepers, and others). Off-road equipment would include equipment such as loaders, bobcats, and mowers. These distinctions are essential to understand as fuel use is examined.

Options in Reducing the Fleet's Carbon Footprint

There are options in reducing emissions from the vehicle fleet. These options provide long-term costs savings to the City. The three apparent options are:

- Drive less. For example, the mean 2019 police vehicle mileage was 11,115 miles per vehicle, highest mileage at 26,904 miles and lowest at 1,377 miles;
- Increase the fuel economy of vehicles in the fleet. The mean for all city vehicles was 18 miles/gallon and sedans and SUVs were 21 miles/gallon, and
- Transition to vehicles that use a fuel type that releases fewer emissions, such as electric.

The first option in reducing emissions is merely *driving fewer miles*. This can be done through department policy or encouraging behavior changes, such as encouraging employees to combine trips and rideshare. This idling policy, proposed by the Fleet Manager in 2019, to reduce with the engine running. Reducing miles can also be a greener transportation, such as bicycling and walking. Not all strategy, and those that can, typically cannot in all situations. bicycling program could equate to a small but relevant

Increasing fuel economy is another effective way to reduce City has successfully used hybrids, both Toyota and Ford, for Departments for a decade; however, these departments are Utilizing hybrids in departments where the vehicles are driven impact fuel consumption.

Natural Gas is being used as an alternative transportation fuel in some urban areas. Although it accounts for 30% of the energy in the United States, only about two tenths of 1% is used as transportation fuel. Natural Gas is less expensive by weight and a cleaner burning fuel by about 20% compared to diesel creating less nitrogen oxide and particulate matter, making it a better choice over diesel in urban areas. However, the particulate matter generated is far smaller making it easier to enter the lungs. Natural gas also requires an investment in infrastructure to make the gas available at fueling stations.

also includes remedies such as an wasted fuel from vehicles sitting opportunity to experiment with departments can employ this Still, a successful walking and percentage.

emissions and fuel consumed. The the Building and Engineering not the city's heaviest fuel users. more miles per year would positively

Current United States fuel economy standards for 2022 are 50.24 mpg (small footprint passenger vehicles), 37.59 mpg (larger passenger vehicles), 40.31 mpg (smaller footprint light-trucks), 26.02 mpg (larger light-trucks). These are the *average* automaker fleet economy targets (further information on US fuel economy standards can be found in the appendix under Fleet Analysis). They include all vehicles in the manufacturer's fleet and both city and highway mileage. These targets do not reflect the current fuel economy of the City's fleet due in part to the age of the fleet but also due to the traditional evaluation criteria used to purchase vehicles, including;

- Municipalities have traditionally given preference to American made vehicles;
- Fuel efficient vehicle options on the market have lagged, especially for police vehicles, which comprised the bulk of the gasoline fleet emissions;
- Adoption of new technology requires both drivers and technical support to adapt or add additional training;
- New technologies can be expensive, require additional equipment, new maintenance requirements, or have a stigma of being unproven technology; and

- Budget considerations.

Sedans are the largest group of vehicles in the fleet (Table 1); however, they are the oldest with the exception of light trucks according to the calculated median of 2012. The Median fuel economy for all vehicles is a mere 18 mpg (City). This fuel economy is not atypical for American municipal fleets. They are replete with low-mpg options, especially in fleets comprised of a majority of police vehicles. Vehicles marketed as *Police Interceptor* vehicles have traditionally been American-made and sold on features, not gas mileage. For example, the 2019 inventory had seven 2019 Dodge Chargers, with a fuel economy of just 19 mpg for city mileage (30 mpg highway). Transitioning appropriate police vehicles to hybrid and fully electric as technologies advance can significantly reduce fleet-related emissions (Figure 28 – Appendix).

Breakdown of Gasoline - Powered Fleet					
Vehicle Description	Number of Vehicles	Highest MPG	Lowest MPG	Median MPG	Median Vehicle Year
All Vehicles	175	54	5	18	2015
Sedans	60	54	16	19	2012
SUVS	43	44	14	19	2016
Lgt Trucks	31	24	13	19	2011
Heavy Trucks	40	14.5	5	8	2015

Modifications in the City Fleet

There have been many advances in light-weight vehicles both in fuel economy and with the addition of electric vehicles, with significant investments currently being made by manufacturers that will continue that trend.

This category of emissions will require sustained capital investment. It will take an estimated minimum of \$400,000 annually to update light-duty vehicles in the fleet to meet gasoline emissions' target goal by 2035. However, this dollar amount is admittedly higher than can currently be budgeted, though it is included for full disclosure; **a more immediately obtainable investment is likely in the range of \$200,000 to \$250,000 annually.** It is essential to begin investing in light-duty electric vehicles now as heavy-duty vehicles will need to be upgraded to higher efficiencies as the regulations catch-up. Heavy-duty vehicles represent a more considerable per item capital investment.

Sustained investment at the \$600,000 level would enable the light-duty fleet to replace low fuel economy vehicles and reduce emissions by 60-90% by 2035. Doubling fuel economy to an average of 36 mpg would save \$175,000 (\$3 per gallon) in fuel cost annually. If the light-duty fleet were wholly electrified, emissions from light-duty vehicles would be reduced by 90%.

At this time, heavy-duty vehicles in the fleet need different strategies to reduce emissions as fuel economy standards have stalled in the United States. Without improved standards or private investment in improving the design for heavy-duty vehicles, there will not be reductions in emissions in the heavy-duty vehicle

category. The 1972 CAFÉ standards currently regulate heavy-duty trucks, including the gasoline-powered F250s, F350s, F550s, Volvo, International, and other heavy-duty diesel trucks. These vehicles are generally getting 5-13 miles per gallon.

A January, 2021 commitment by General Motors to replace its gas-powered fleet with electric-power by 2035 may signal a long-overdue industry shift. As electric-vehicle technologies become more mainstream and more affordable, opportunities for Goshen to capitalize will increase.

Note: Greenhouse gas (GHG) emissions are a factor in the production of vehicles. Electric vehicles (EVs) tend to have a higher initial carbon footprint than their internal combustion counterpart. (There are a few internal combustion vehicles for which this is not the case.) This is mostly due to the energy-intensive production of batteries. Production location also plays a factor. Electric vehicles produced in the United States, for example, produce significantly fewer GHGs compared to those produced in China or Indonesia. Emissions are generated based on the extraction of raw materials, transportation, production, cleanliness of the power grid, and many other factors. Lifetime emissions are still lower on EVs compared to their internal combustion counterparts.

Climate Action Plan Criteria:

1. Develop reduction targets for emissions categories.
2. Determine emissions categories that will require additional data.
3. Determine which emissions categories or strategies should be re-evaluated.
4. Identify strategies to anticipate and lessen local climate change impacts.



Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Time line	Co-Benefits				Suggested Responsibility	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes
					Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality						
Sustainable Transportation  Sustainable Transportation 	Reduce passenger vehicle emissions by 25% or increase mean fuel economy to 27 mpg per City Department by 2026 (passenger vehicles)	3.1	Fund the adoption of light-duty vehicles to replace poor energy performers and reduce emissions by 25% from gasoline powered fleet by 2026. Continue to incorporate hybrid and EV alternatives.	1st Year - On-going	✓	✓	✓	✓	✓	Fleet Manager and Department Heads	\$ 250,000	\$ 250,000	\$ 75,000	Minimum fuel savings for gasoline with a reduction of 25% fuel priced at \$3/gallon.
		3.2	Facilitate the development and implementation of a gasoline emissions strategy by each Department to reduce emissions by 25% or increase Department mean fuel economy to 27 mpg for passenger vehicles by 2026.	1st Year - On-going	✓	✓	✓	✓	✓	Departments work with the Fleet Manager to develop strategies. Each Department's plan to increase fuel economy and reduce emissions responsibility of Department Head.	Staff Time	Staff Time	Reduce expense of gasoline. Health benefits through better air quality.	
		3.3	Evaluate and replace appropriate gasoline-only Police vehicles with hybrid and electric vehicles as technology improves.	1st Year - On-going	✓	✓			✓	Fleet Manager and Police Department	From line 3.1	From line 3.1	From line 3.1	The automotive sector is rapidly changing. There are still limitations to EV technology. The City will incorporate EV as it makes sense using cost-benefit analysis evaluation both economically and environmentally.
		3.4	Educate and Demonstrate to Departments and employees new innovations on the market as they become available or viable options.	1st Year - On-going	✓	✓	✓	✓	✓	Fleet Manager with assistance as needed	\$ 500	\$ 500	Create a culture of proactive and participating employees.	
		3.5	Develop a strategic plan for municipal fleet charging stations, including a few community access (early adoption only) to become EV sustainable in government operations.	1st Year - On-going	✓	✓	✓	✓	✓	Representatives of various Departments led by the Fleet Manger and coordinated by Environmental Resilience	Staff Time	Staff Time	Grant money could be used to fund.	
	3.6	Develop an education and awareness campaign to promote bicycling and identify and eliminate barriers, where possible, to employees bicycling to work.	2nd Year - On-going	✓	✓	✓	✓	✓	Could develop an employee-represented "Active Transportation" committee comprised of representatives of various Departments and coordinated by Environmental Resilience	\$ 1,500	\$ 1,500	Health Insurance savings directly or indirectly. Healthy & Fit Employees.		
	3.7	Develop guidance to allow & encourage bicycling as a commuting option during the workday (where applicable), including bike storage infrastructure.	2nd Year - On-going	✓	✓	✓	✓	✓		\$ 1,000	\$ 1,000			
	3.8	Start a pilot program to provide "fleet" bikes at appropriate City buildings to reduce miles driven using motorized vehicles.	2nd Year - On-going	✓	✓	✓	✓	✓		\$ 10,000	\$ 2,000			
	3.9	Continue to work to achieve the goals of Goshen's Bicycle and Pedestrian Plan. Work to achieve "Silver" status as a Bicycle Friendly Community.	1st Year - On-going	✓	✓	✓	✓	✓		All Departments	to be determined		to be determined	

Figure 19 Sustainable Transportation Strategies

Strategy 4: Sustainable Infrastructure

Climate changes will also affect infrastructure demands and maintenance practices. According to Purdue University Indiana Climate Change Impact Assessment, Indiana has already warmed 1.2°F, and that warming is accelerating, with an expected 5-6°F increase by mid-century and consistently more warming by the end of the century. The number of extreme heat events (defined as a high of 90° F or more, combined with a low of 68° or more) is projected to rise from an average of twenty-one (21) currently to between fifty-eight (58) and seventy-two (72) events per year. The State will also see a continued increase in rainfall intensity and average annual rainfall. Annual average rainfall has increased by 5.6 inches since 1895, and more rain is falling in higher intensity downpours.

These changes will add heat stress to infrastructures such as roads, sidewalks, and bridges. Increased rainfall will bring a greater likelihood of flooding, especially localized flooding on streets where water pools before entering storm sewers. Additional rainfall and increased intensities will test sewer capacities and increase pollution from urban and agricultural runoff. Increased heat and stormwater will create an opportunity for constructing green spaces to dissipate urban heat sinks and absorb rain events. Such green infrastructure provides value by reducing load within built stormwater systems and by providing ambient cooling.

Training city staff to care for green infrastructure will represent a new and critical capacity for the City to accept. As with other important infrastructure (streets, for example), techniques, skills, and schedules for maintenance of green infrastructure will need to be developed and deployed in order for these nature-based systems to work as effectively as possible.

The City can continue to look for ways to complement a variety of emission-cutting behaviors by looking for opportunities for “road diets” – shrinking the size of our roadways. Doing so reduces material and maintenance costs (and associated emissions), reduces traffic emissions, and can increase non-motorized transportation.

Balancing infrastructure (including green infrastructure) and utility needs will be an ongoing point of discussion. Increasing the number of trees in the community is a vital part of adapting to climate change, and yet street right-of-way – a prime site for trees – is increasingly crowded with other infrastructural needs. State legislation, as well as local interest, will play a part in the manner in which sustainable infrastructure is created.

Climate Action Plan Criteria:

1. Develop reduction targets for emissions categories.
2. Determine emissions categories that will require additional data.
3. Determine which emissions categories or strategies should be re-evaluated.
4. Identify strategies to anticipate and lessen local climate change impacts.


Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Timeline	Co-Benefits					Suggested Responsibility	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes
					Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality	Improve Government Resilience						
Infrastructure 	Reduce energy and emissions from street lights or eliminate where feasible.	4.1	Convert > 95% of street and parking lights & traffic signals to LED technology by 2026.	1st - 5th Year	✓			✓	All Departments who operate street and parking lights documented by Environmental Resilience	to be determined	Staff Time	to be determined			
		4.2	Identify, map & evaluate possible reductions or eliminations, incl. the number of parking lamps on public properties.	2nd - 3rd Year	✓			✓		to be determined	to be determined	\$200+ annually per LED pole eliminated			
	Review infrastructure standards and maintenance practices every three years to reflect current mitigation practices.	4.3	Evaluate and revise standards where climate change projections, such as increased winter freeze/thaw and higher intensity rainfall, create weaknesses in infrastructure. Consider revisions to require reasonable emissions reductions and low impact measures to adapt to climate impacts.	3rd - 5th Year	✓		✓	✓	Engineering & Street Departments	to be determined	to be determined				
	Develop capacity to maintain green infrastructure.	4.4	Develop and deploy maintenance skills, techniques and schedules for green infrastructure installations across the city.	3rd - 5th Year	✓		✓	✓	Representatives of various Departments coordinated by Environmental Resilience	to be determined	to be determined	to be determined			
	Develop a culture of walking and biking as proven by the use of walking areas and local surveys.	4.5	Increase the number of miles of "Complete Streets" to enable safe, convenient, and efficient travel and access for users of all ages and abilities regardless of their mode of transportation.	On-going	✓	✓		✓	Representatives of various Departments coordinated by Environmental Resilience	to be determined	to be determined	Quality of Place			

Figure 20 Sustainable Infrastructure Strategies

Strategy 5: Utility Processes

The Goshen Water and Wastewater Utility consume electricity and natural gas to pump groundwater for water treatment and distribution of drinking water throughout the City and collect and process wastewater. These Utilities generate fifty-eight (58) percent of all the MTCO₂ emissions in Goshen’s government operations, with most of that energy used to power pumps and heat water.

The combined Utilities use approximately 7,345,718 kWh of electricity and 156,108 therms of natural gas annually, generating 5,545 MTCO₂ emissions (not including emissions related to nitrous oxide, currently under review). The Wastewater Treatment Plant (WWTP) is the primary user of energy, with the wastewater treatment process at sixty-two (62) percent of electricity and seventy (70) percent of natural gas.

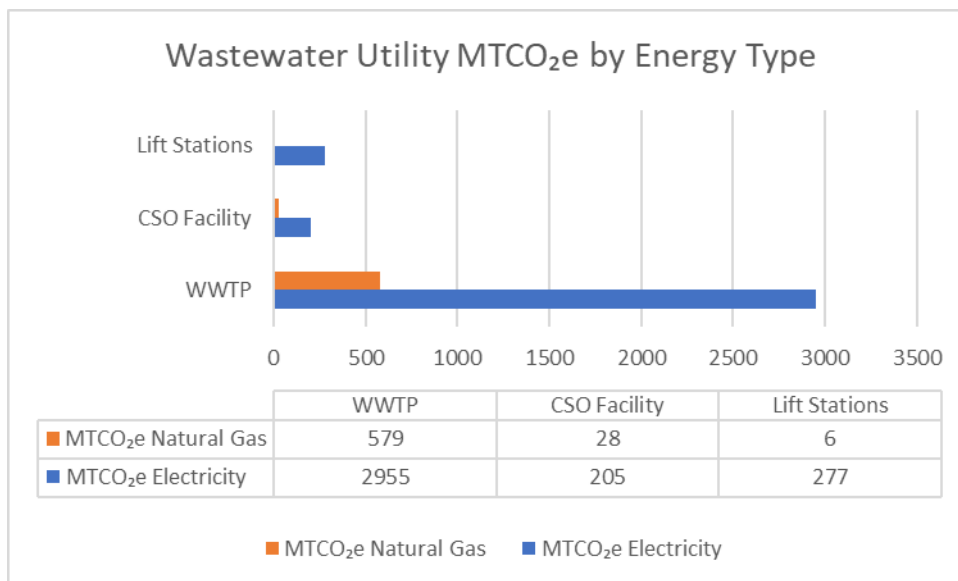


Figure 21 Wastewater Utility Emissions by Energy Type

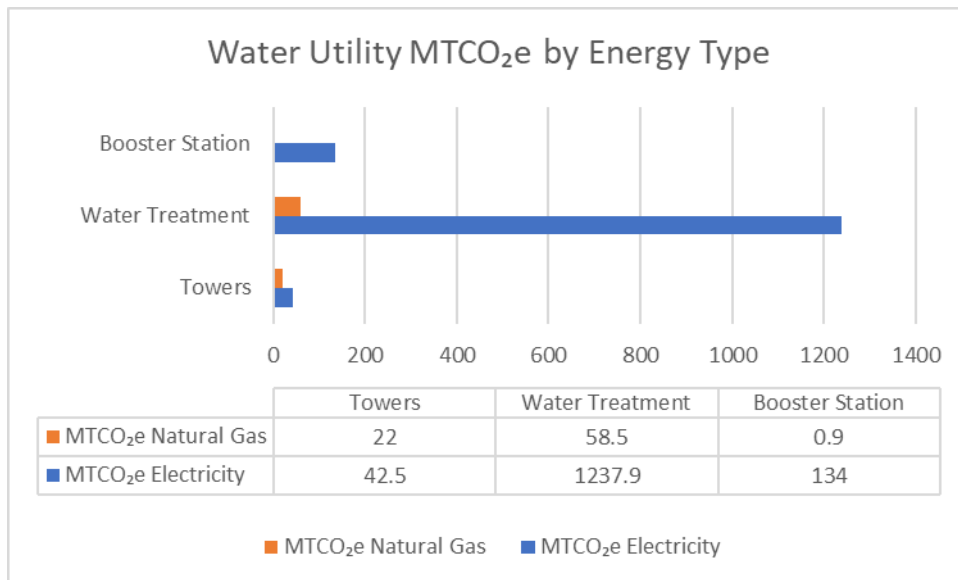


Figure 22 Water Utility Emissions by Energy Type

The Utilities are consistently in a state of innovation due to the frequency of new regulations and the need to provide ongoing upgrades to maintain the Utilities as critical infrastructure in the community. These needs are balanced with the necessity to provide clean drinking water and wastewater services to the community at an affordable cost. These needs have resulted in consistent upgrades and efficiency improvements over the years, such as the stormwater detention facility and adoption of Supervisory Control and Data Acquisition systems. Upgrades to the facilities are expensive, and as of 2021, it is hard to identify more upgrades that could yield significant energy and emissions savings with an adequate payback timeline. Currently, the WWTP is undergoing expansion and efficiency improvements, set for completion in December, 2021. With these improvements, the wastewater treatment plant is expected to reduce energy consumption by 1,321,000 kWh annually, equating to 858 MTCO₂. This is a twenty-one (21) percent reduction in emissions from the WWTP and a 9.6% reduction of MTCO₂ in overall City government emissions.

Beyond these current improvements, and some speculation about the ability to co-generate electricity from WWTP methane, the City's best option for mitigating Utility emissions may be through offsets, such as construction of solar arrays which either directly benefit Utility facilities, or which directly benefit other City operations. While there is significant cost involved in such construction, solar is nevertheless a sound investment in the near and long term. Even in a more extended return-on-investment scenario, solar energy production benefits can be considered a worthy deposit on social and ecological health.

The critical nature of these water Utilities to the basic health and well-being of the Goshen community, combined with the facts that they a) require an extraordinary amount of energy to function (especially WWTP), and b) are an essential safeguard of ecosystem integrity (especially WWTP), means that they are in many ways the centerpiece of any meaningful work toward City government emissions reductions.

Climate Action Plan Criteria:

1. Develop reduction targets for emissions categories.
2. Determine emissions categories that will require additional data.
3. Determine which emissions categories or strategies should be re-evaluated.

Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Timeline	Co-Benefits					Suggested Responsibility (implementation, enforcement, monitoring, etc.)	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes	
					Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality	Improve Government Resilience							
Utility Processes	Utility Processes	Offset energy consumption through solar installation.	5.2	Explore solar energy production options at WWTP and Water utility with the intent to fund as offset against current energy useage.	On-going	✓	✓			✓	Utility and Engineering Department, coordinated by Environmental Resilience.					
		Reduce maintenance costs and emissions	5.3	Introduce pollinator-friendly native plantings in various mower-intensive sites.	On-going	✓	✓	✓	✓	✓	Utility Department					
		Review Utility Processes & Energy Usage every 5 years for efficiency	5.1	Continue to encourage and support professional learning opportunities, evaluating new strategies, and knowledge sharing with other communities.	On-going	✓	✓		✓	✓	Utility Department		on-going	on-going		

Figure 23 Water and Wastewater Utility Strategies

Strategy 6: Sustainable Land Use through Resilient Ecosystems and Biodiversity

Land Management encompasses all of the naturally occurring animate and inanimate members of our ecosystem. These occupants of the ecosystem play critical roles in the health of Goshen's human economy. Learning new ways to live with and appreciate these non-human members of our community is necessary for our social systems' ongoing health and wealth. Land management, in the context of this Climate Action Plan, means developing better ways for people to live within our means and encouraging our ecosystem to expand and flourish.

An essential part of better land management will be a comprehensive inventory of City-owned land. Such an inventory will describe how the land is currently used, what the land type is, what kinds of flora and fauna are present, how vegetation is currently managed, and what kind of long-range plans exist for the land. With such an inventory completed, current management practices can be compared to best sustainable management practices, and a plan developed to move land management in a direction that increasingly limits emissions and other pollutants, conserves water, and increases biodiversity and canopy. Our goal will be to work towards mowing less, installing and managing more native grasses, forbs, and trees, and using less fertilizers and irrigation.

Preserving floodplain and adopting a flood resilience plan which is responsive to climate science are key characteristics of sustainable land use in Goshen. A Flood Resilience Plan commissioned in late 2020 will set the stage for ongoing discussion and progress toward key goals, such as enhancing floodway property already managed by Goshen Parks, and developing an efficient process for purchasing vulnerable floodway real estate when available. Incorporating Goshen's Urban Tree Canopy Goal of 45 percent tree-shade by 2045 will also play an important role in land management decisions on city property. More on the details of this plan are outlined in the Tree Canopy section below.

Water Conservation

Land management in Goshen will require conservation of such natural phenomena as groundwater, surface water (i.e. rivers, creeks, ditches), trees, healthy soil, and clean air. Drinking water in Goshen is sourced from groundwater. The Water Utility's average production is 3.5 million gallons per day, with a maximum production capacity of about 10 million gallons per day. Only a very small amount of that water will become groundwater again. Remaining water returns to the atmosphere through evaporation, or become a part of a living organism and be aspirated into the air, or flow to the wastewater treatment plant and then the Elkhart River. Groundwater is recharged by precipitation, but only about one quarter of all the water which falls will become groundwater. Reducing the consumption of water preserves groundwater stores. Saving water also reduces energy use and emissions.

Protecting ground- and surface-water from pollution is an important aspect of conserving our water. Urban pollution typically comes in the form of phosphorus, nitrates and soil sediment. (Industrial pollutants can present different toxins). The primary sources are vegetative (yard) waste, soil runoff, and fertilizer, none of which are so different from agricultural pollution except in concentrations: urban areas are connected to storm sewers. Storm sewers carry yard waste, soil, and fertilizer from all over the City and deposit them into the waterways in a potent mix. Once in our waterways, these pollutants can manifest in long-lasting consequences for humans and non-humans alike.

Fresh water is likely to be an increasingly precious resource in this century. We live in a region which has abundant fresh water access at the current moment. Planning for its continued safety and abundance will be critical as human populations shift due to climate change.

See the Appendix for further discussion on Water Conservation and Pollutants.

Climate Action Plan Criteria:

1. Develop reduction targets for emissions categories.
2. Determine emissions categories that will require additional data.
3. Determine which emissions categories or strategies should be re-evaluated.
4. Identify strategies to anticipate and lessen local climate change impacts.


Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Timeline	Co-Benefits				Suggested Responsibility (implementation, enforcement, monitoring, etc.)	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes		
					Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality							Improve Government Resilience	
Land use and Maintenance Practices 	Reduce resources used in maintenance while still proving for local "green" spaces and protecting natural habitat. Evaluate bi-annually.	6.1	Develop a plan to implement "most resilient" conservation practices for City-owned and maintained vegetated spaces.	2nd - 3rd year and on-going	✓	✓	✓	✓	✓	All Departments. Recommendations workgroup of persons representing multiple Departments - Environmental Resilience will compile and organize	To be determined. Based on "changes" made to land use.	Annual maintenance lower than manicured / mowed lawns	Protection of species and ecosystem diversity	Purdue University Extension	https://turf.purdue.edu/time-to-water/ https://www.extension.purdue.edu/extm/edu/ay/ay-7-w.pdf	
		6.2	Incorporate Canopy Goal objectives and apply appropriate tree maintenance on City properties and right-of-ways	1st Year - on-going	✓	✓	✓	✓	✓		Minimal	Tree Maintenance, possible utility costs.	Energy, stormwater retention.			
		6.3	Develop city-wide maintenance policies on fertilizer, irrigation, mowing, prescribed burning, salting, and other maintenance practices that meet the needs of different property types and "uses." Review Noxious Weed ordinance.	2nd Year and on-going	✓	✓	✓	✓	✓		Staff Time	less annual maintenance costs	\$ personnel, equipment (mowing), fertilizer, and watering.			
Wildlife Habitats & Species Diversity	Protect ecosystems, habitats, and species diversity.	6.4	Develop a plan to monitor and publicly share the quality of water, land, and air resources. Including developing a comprehensive list of local & migratory flora & fauna, including invasives (air, water, & land), identify their habitats, food sources, stressors. Species diversity gains & losses can act as an indicator of land, air, water health.	2nd - 5th Year		✓	✓	✓	✓	Department Representation coordinated by Environmental Resilience	to be determined	to be determined	Promote Goshen, create a better quality of place.	Goshen Parks Master Plan 2019-2023, Resource Strategies, Goshen Comprehensive Plan 2025 2025, C-12, NE-1, NE-2, NE-3, NE-4		
		6.5	Identify, map, and grade existing ecosystems on public lands. Evaluate habitat diversity, duplication, and connectivity to support species survival.	2nd - 5th Year	✓	✓	✓	✓	✓			to be determined			Protection of species and ecosystem diversity	
Ordinances	Review ordinances every three years to reflect the most current mitigative practices.	6.6	Incorporate longer term climate projections as a part of City-owned land use planning and development. Explore the use of existing ordinances to further align private development with climate projections.	1st - 2nd Year, 5 year reviews	✓		✓	✓	✓	Many Departments	Staff Time	Staff Time	Practices provide habitat for species that are struggling to survive, including bees & butterflies.	Purdue University Climate Change Research Center, I.U. Environmental Resilience Institute, Comprehensive Plan 2025, NE-8		
		6.7	Develop updated research to support existing science-based policies that are currently successful in other communities.	2nd Year, 5 year reviews	✓		✓	✓	✓			Staff Time			Staff Time	
Flood Resilience	Enhance Flood Resilience to reduce losses from flooding.	6.8	Collaborate with specialists to develop and implement a flood resilience plan including smart growth approaches, specific land-use policies, and a process to audit, update, and revise the City's plans, policies, and regulations.	1st Year and on-going	✓	✓	✓	✓	✓	All City Departments	\$ 50,000	to be determined	Reduced flooding, improved infrastructure	Professional Consulting Services, Goshen Comprehensive Plan 2025, C-10, C-11, NE-1, NE2, NE 3, NE-5, NE-6	Impacts on infrastructure- design & maintenance	
		6.9	Preserve, enhance, and acquire existing floodplain	On-going	✓	✓	✓	✓	✓	Engineering, Planning, Utility Departments	as appropriate, to be determined	as appropriate, to be determined	Reduced flooding, improved infrastructure			

Figure 24 Sustainable Land Use Strategies

Strategy 7: Tree Canopy

The 2019 Goshen Urban Tree Canopy Goal will increase our urban forest from twenty-two (22) percent coverage (2013 data) to forty-five (45) percent by 2045. Urban forest management will care for this increasing population of trees to improve the built environment. Additionally, the City intends to diversify tree species in order to reflect the changing migratory patterns of trees in the Goshen region due to a changing climate. An example of this is the sugar maple. This tree species has thrived in the Goshen area, but Goshen will increasingly be on the southern fringe of this tree's ideal habitat as the climate changes.

Adopting policies and practices to support the canopy goal on City-owned property can have a two-fold impact on our Climate Action Plan and the emissions it seeks to reduce. First, increased tree canopy can directly reduce emissions by lowering energy consumption, especially in summer months when air-conditioning is employed. Trees can also reduce winter heating needs by blocking freezing windchills. Goshen's public tree inventory calculates that public trees saved \$408,000 in energy consumption costs in 2020. Additionally, tree canopy captures significant amounts of precipitation, keeping more than 16 million gallons of stormwater (2020) out of our sewer system, some of which would be treated, causing the release of emissions.

Secondly, trees offset greenhouse gases: by sequestering greenhouse gases, trees allow the City to deduct emissions from the total gases that are released into the atmosphere. Greenhouse gas emissions are a product of the activities that support Goshen's essential services. The City cannot realistically achieve Net Zero Emissions by 2035 without offsetting some of those emissions. Our inventoried public trees (roughly 14,000) offset 1207 MTCO₂e in 2020 – 80 percent of 2019 Goshen City government operated vehicle emissions (1505 MTCO₂e). This is a significant contribution to our overall goal of achieving zero emissions. As the City leads the canopy goal effort toward 45 percent city-wide, we can continue to plant and care for trees to increase the important emissions offset which they contribute.

Achieving 45% canopy will require substantial planting in private property, beyond the jurisdiction of the City. Nevertheless, the City will need to play its part in planting trees where feasible. A growing issue, with potential state-level legislation, is continued crowding of rights-of-way with various underground infrastructure (water, sewer, gas, electricity, telecom). Such crowding becomes prohibitive for trees and other green infrastructure. This is an issue which the City may need to address in order to accomplish the aims of the Canopy Goal.

It is important to recognize that while an increase in tree canopy will provide substantial benefits, there is also some increase in cost. More trees will produce more leaves and debris over the years. There is an important opportunity for Goshen residents to assist the City toward the combined goals of the Canopy Goal and the Climate Action Plan by willingly adopting a culture of on-site leaf management (mulching, composting, etc) where possible, as well as woody debris management. Doing so will reduce the labor and emissions associated with this task. The City can engage the community on this and other related Canopy issues.

Climate Action Plan Criteria:

1. Determine emissions categories that will require additional data.
2. Determine which emissions categories or strategies should be re-evaluated.
3. Identify strategies to anticipate and lessen local climate change impacts.


Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Timeline	Co-Benefits				Suggested Responsibility	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes
					Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality						
Resource Conservation & Land Management Urban Forestry 	Urban Forestry - Increase the Tree Canopy to 45% by 2045.	7.1	Develop an internal policy to protect current city-owned forests.	1st Year	✓	✓	✓	✓	✓	Environmental Resilience with others	Discussion as a part of flood resilience plan development		Community benefits in stormwater retention, lower energy costs, improved quality of life, lower ambient temperatures. Goshen Comprehensive Plan 2025, NE-4: Maintain, grow and promote Goshen's urban forest program. Goshen Parks Master Plan 2019-2023, Urban Forestry Division. Goshen Urban Tree Canopy Goal 2019	
		7.2	Update Urban Tree Canopy Assessment every five years to track progress toward 45% goal and to monitor the integrity of existing forested land. Maintain public tree inventory.	1st Year	✓	✓	✓	✓	✓	Environmental Resilience	\$ 15,000	\$ 3,000.00		
		7.3	Collaborate with landowners. promote long-term protection of forested land.	1st Year	✓	✓	✓	✓	✓	Environmental Resilience	Environmental Resilience Staff Time	Environmental Resilience Staff Time		
		7.4	Identify, map, and grade city-owned forested land.	1st - 2nd Year	✓	✓	✓	✓	✓	Environmental Resilience with others	to be determined	to be determined		
		7.5	Identify needs and opportunities to increase acreage of forested land.	On-going	✓	✓	✓	✓	✓					
		7.6	Update the tree ordinance including policy in support of the canopy goal.	1st Year	✓	✓	✓	✓	✓	Can be done as part of flood resilience plan development.				

Figure 25 Resource Conservation and Tree Canopy Strategies

Strategy 8: Sustainable Energy

Developing the City's own sustainable energy source will be an important component to attaining some energy independence from both the purchase and delivery of energy through market fluctuation and long-term increases in the cost of that energy. By making sustainable energy investments, the City can develop greater energy independence and offset a portion of its own emissions.

Currently, the City acquires over 99% of its energy from NIPSCO. NIPSCO is aggressively working toward generating sixty-five (65) percent of its electricity from renewable sources by 2028. Solar has become cost effective and NIPSCO is currently interested in making large investments in clean energy sources. The City's government operations could meet its electric needs with the addition of approximately 5.5 megawatts of energy generation, if that electricity could be net metered. Given the current regulatory environment and the cost benefit of large solar installations, now is a favorable time to look at investing in energy infrastructure.

The City could also look to develop community partners in shared investment of energy projects.


Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Timeline	Co-Benefits				Suggested Responsibility	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes
					Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality						
Sustainable Energy Energy Investments for a more Sustainable Community 	Evaluate options for developing local, sustainable energy supply to increase energy independence and reduce emissions.	8.1	Based on available solar footprint and energy consumption, identify buildings and properties that could be used for renewable energy installation. Develop a cost-benefit analysis for best scenario properties that can be used as a starting point if funding is available.	2nd year - Review Annually	✓	✓			Engineering with assistance from Facility Managers and Environmental Resilience	Cost and return on investment to be determined. Many large solar investments are becoming an 8-10 year payoff.	Staff time	Staff Time	Goshen Comprehensive Plan 2025 , NE-8: Encourage sustainable living and business practices	Solar: Roughly would need 5 MW Solar Field (Assuming 4 hours of peak sunlight) (WWTP reductions factored in). 470 watts typ. per panel - typ. size 20.8 sf (panel only) Wind: Avg. wind speed at 33 ft is 5m/s. Vertical turbines can operate as low as 2m/s and as high as 60m/s.
		8.2	Develop a 5-year plan to incorporate energy generation at select sites.	2nd Year	✓			✓			0	0		
		8.3	Evaluate Investing public funds in local renewable energy projects	3rd Year	✓	✓	✓	✓			✓	0		

Figure 26 Sustainable Energy Strategies

Strategy 9: Education

Effective employee education is vital to the City's success in meeting emissions reduction targets. Many of the policies and behaviors that will reduce emissions are not currently a part of American cultural norms. The program's success depends on employees' and leaders' ability to objectively look at policies and practices with a critical eye and separate norms from factual information to determine best practices that both get the job done and are good for the environment which sustains our community. For example, many can probably agree, given adequate information, that lawn care practices which resemble vacuuming and cleaning a living room are not healthy for the living things in and visitors to the lawn. The question will be, are we willing to form a different view and establish new practices in order to save money, reduce energy consumption, and reduce emissions?

Emissions reduction is often a solitary job with one small success by one individual employee at a time. That makes it critical for every employee to understand why their participation in this Climate Action Plan is necessary to achieve emissions reductions. It will be the efforts of many people that equate to success. As we are willing to try new things, take the small steps, and then work into larger ones, the City will succeed.


Emissions Category	Target Goals	Action #	Actionable Items (not all-inclusive)	Review Time line	Co-Benefits				Suggested Responsibility	Initial Investment	Additional Annual Investment	Annual Savings	Related Community Plans	Notes
					Reduce GHG	Improve Quality of Life & Workplace	Improve Wildlife Habitat	Improve Water Quality						
Sustainable Energy 	Energy Investments for a more Sustainable Community	Evaluate options for developing local, sustainable energy supply to increase energy independence and reduce emissions.	8.1 Based on available solar footprint and energy consumption, identify buildings and properties that could be used for renewable energy installation. Develop a cost-benefit analysis for best scenario properties that can be used as a starting point if funding is available.	2nd year - Review Annually	✓	✓			Engineering with assistance from Facility Managers and Environmental Resilience	Cost and return on investment to be determined. Many large solar investments are becoming an 8-10 year payoff.	Staff time	Staff Time	Goshen Comprehensive Plan 2025 , NE-8: Encourage sustainable living and business practices	Solar: Roughly would need 5 MW Solar Field (Assuming 4 hours of peak sunlight) (WWTP reductions factored in). 470 watts typ. per panel - typ. size 20.8 sf (panel only) Wind: Avg. wind speed at 33 ft is 5m/s. Vertical turbines can operate as low as 2m/s and as high as 60m/s.
			8.2 Develop a 5-year plan to incorporate energy generation at select sites.	2nd Year	✓			✓			0	0		
			8.3 Evaluate Investing public funds in local renewable energy projects	3rd Year	✓	✓	✓	✓			0	0		

Figure 27 Education Strategies

Equity

One of the most important aspects and outcomes of creating and following a climate action plan is equity. Equity is a term that sounds a lot like "equality" and certainly has a similar aim, but equity has to do with the structures and systems that allow equality to either flourish or fail. An oversimplified example might be to imagine that all the households in Goshen are allocated an equal amount of clean water each day – this sounds fair; but there is an equity problem because not all households have the same number of residents, meaning that some people actually receive more clean water and some receive less. Of course, we intend to solve this problem by allowing each household to pay an equal rate for as much water as they need. What if there is an equity issue regarding the funds necessary to pay for equal access to clean water?

Our government operations climate action plan seeks to move us towards equity – that is, towards operations that benefit all people in an equitable fashion. That's a really high bar, and just like many of the goals in this plan, equity will not be met quickly or necessarily with ease. This is in part because we are used to thinking about "equal" – which is a lot easier to measure and distribute than equity. Equity means putting the resources where they are most needed, which does not always mean equal distribution. For example, flood relief funds should go to those who experience flood damage, not to those who are high and dry.

How might a focus on equity, within the context of this climate action plan, change the nature of our government operations? If cost savings and reduction in greenhouse gas emissions are the metrics of success for our plan, then equity – an appropriate distribution of resources – should become an instinctive partner in working toward that success. In fact, there are ways in which we do this instinctively already – sharing equipment, sharing work hours, sharing funds, even sharing sick hours. We should understand that reducing our energy consumption, for instance, is part of what it means to equitably distribute resources appropriately: energy which we don't use saves us money; the money can be used effectively for some other service; the energy can be used effectively for some other service; the other service benefits a broader swath of our public in incremental (but accumulative) ways; the service itself can be targeted equitably, brought to residents whose need is greatest; the reduced emissions from lower energy consumption incrementally (and accumulatively) reduce the impacts of climate change, in Goshen and far away, which further conserves an array of resources, which can be equitably allocated.

Climate change will impact all of us in Goshen, but it will especially affect those already the most vulnerable and underserved – the people for whom equity matters most. At its heart, responding to climate change is about equity. The essential mission of the City is to serve our residents well. This climate action plan will help us do so by allocating our resources in an increasingly equitable manner to offer optimal services that build quality of life for all of us.

Citations

Citation: WWF (2020) Living Planet Report 2020 - Bending the curve of biodiversity loss. Almond, R.E.A., Grooten M. and Petersen, T. (Eds). WWF, Gland, Switzerland.

<https://f.hubspotusercontent20.net/hubfs/4783129/LPR/PDFs/ENGLISH-FULL.pdf>

MORE TO COME

Appendix

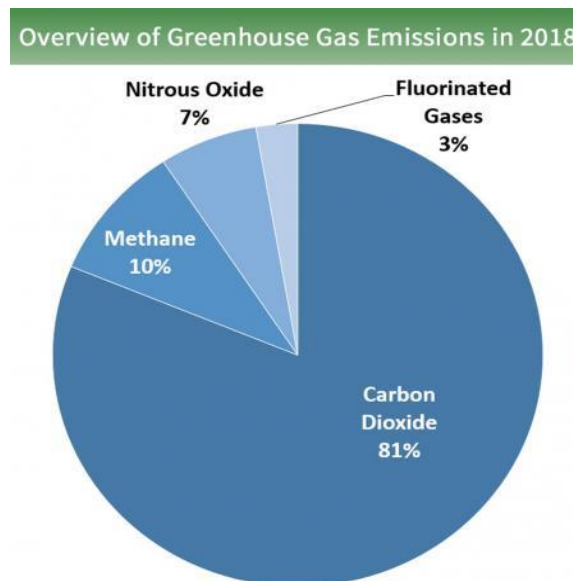
Greenhouse Gases in the United States

Greenhouse gases are produced by human and natural activities worldwide. It will take everyone's effort to stop the rise in greenhouse emissions and reduce emissions to a sustainable level. Almost every aspect of Hoosier life has a carbon footprint.

<https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

Greenhouse gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases. Carbon dioxide accounts for eighty-one percent of greenhouse gases released by the United States as measured and calculated by the EPA.

The pie chart shows the different types of gases and their respective percentages.



Total Emissions in the United States in 2018 equaled 6,677 Million Metric Tons of CO² equivalent (MMTCO₂e). Percentages may not add up to 100% due to independent rounding.

Carbon dioxide (CO₂): Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees, and other biological materials, and also as a result of specific chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when plants absorb it as part of the biological carbon cycle.

Methane (CH₄): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and the decay of organic waste in municipal solid waste landfills.

Nitrous oxide (N₂O): Nitrous oxide is emitted during agricultural and industrial activities, combustion of fossil fuels and solid waste, and treatment of wastewater.

Fluorinated gases: Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in smaller quantities, but they are sometimes referred to as High Global Warming Potential gases ("High GWP gases") because they are potent greenhouse gases.

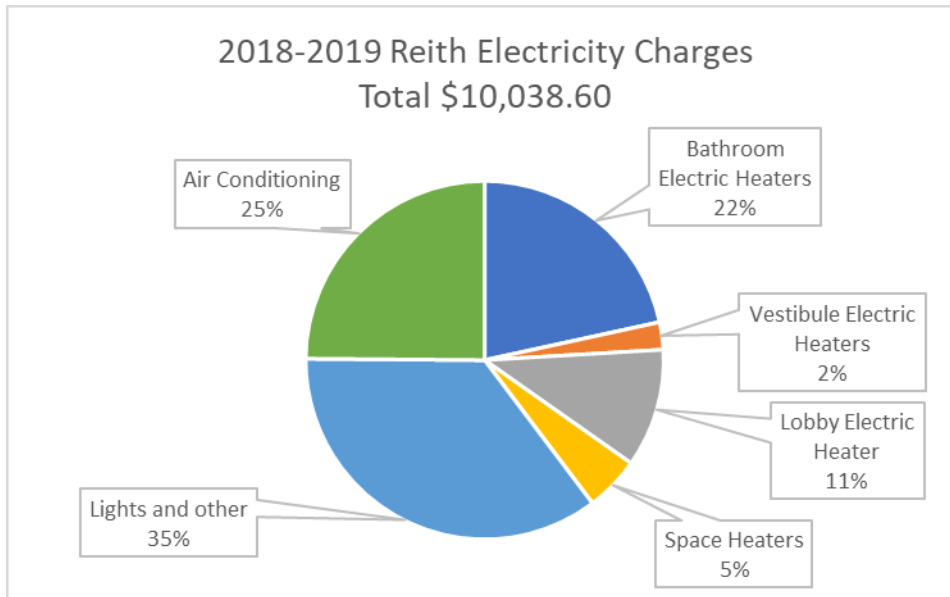
Carbon is stored in rock, the ocean, the atmosphere, fossil fuels, and living things. Carbon cycles in and out of these storage reservoirs or sinks as things live and die, volcanoes erupt, fires blaze, fossil fuels are burned, and through a variety of other mechanisms. Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees, and other biological materials and certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when plants absorb it as part of the biological carbon cycle.

Energy Audits

A case study using Reith Interpretative Center represents one model for reducing electricity consumption.

An energy audit was completed for the Reith Interpretative Center in 2020 to determine how energy was being used in the facility and how savings could impact both emissions and the bottom line. Several aspects of the building were evaluated, including utility billing records, lighting, efficiency of appliances and their run times, thermostat settings, controls, inadequacies in the thermal envelope, and occupant behavior.

The electric utility charges for the 2018-2019 year totaled \$10,038.60 and equated to 64,400 kWh of consumption resulting in 46.64 MTCO₂ in emissions. Thirty-five (35) percent of the yearly energy use was being used on electric ceiling-mounted heaters, twenty-five (25) percent was dedicated to air conditioning, thirty-five (35) percent went to lights and office equipment, and five (5) percent was being used for space heaters.



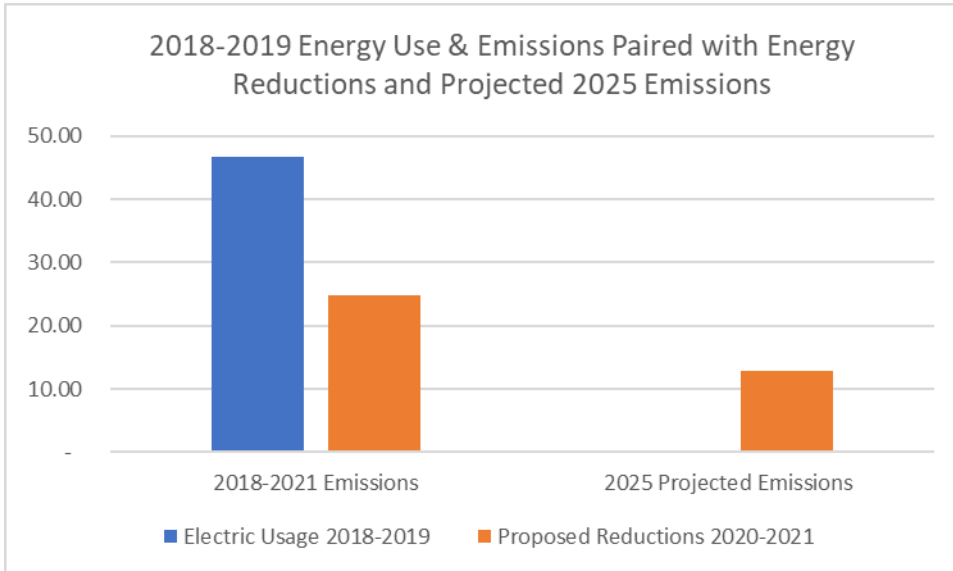
Recommendations would reduce emissions and save the City money. Suggestions included updating equipment, controls, and lighting modifications and those to change occupant behavior. An electrical contractor could complete all mechanical control modifications and lighting replacements for under \$5,000.

Recommendations included:

- Replace thermostats to electric heaters to allow better accuracy and programmability,
- Add motion sensors to the bathroom and bathroom vestibule lighting so the lights will only be on when needed,
- Replace the three central thermostats in the building with smart thermostats that can be controlled remotely,
- Lobby (office space) ceiling electric heater needs replaced. It provides inadequate heating due to malfunction AND possibly the size of the heater for the space. (not included in estimate),
- Convert current fluorescent lighting to LED,
- Evaluate and repair or replace parking lot lighting - make single lamp / LED and add sensor dusk dawn or turn off after 4 hours of use,
- Vestibule electric ceiling heaters (east and south entrances) should only be used when many people are entering and exiting the building, or not at all. For drying wet rugs during high traffic times, a floor dryer would be more effective,
- The thermostat should be placed at 77° in the summer,
- Individual work stations may utilize a USB-powered desk-top fan for evaporative cooling,
- Individual work stations may utilize a desktop lamp at workstation instead of multiple florescent ceiling lamps, and

- Keep unoccupied rooms (such as bathrooms) at lower/higher temperature (preventing freezing and extreme humidity).

The resulting changes would yield a substantial reduction in electricity at Reith. It is estimated that the energy usage would go from 64,400 kWh to 32,216 kWh, a fifty-three (53) percent reduction in electricity, resulting in an average \$4,700 annual savings. That reduction is magnified when looking at the emissions released. The initial emissions reduction is also 53% or 22.24 MTCO². That is down from the initial emissions at 41.86 MTCO². Over time, the reduction is combined with the decarbonization changes being made by NIPSCO, making the emissions in 2025 just 11.51 MTCO², a seventy-two (72) percent reduction compared to the 2018-2019 year.



Although the magnitude of savings in this example will not be typical of all buildings, at least when looking at changes that involve a very low investment, even the most up-to-date buildings have opportunities for easy improvements to save electricity both operationally and through employee participation.

Reducing natural gas can be more difficult and more expensive. Natural gas is almost exclusively used for heating buildings and water. That limits the reductions available to increasing the efficiency of mechanical equipment and insulating properties, increasing building envelope tightness, and human behavior. In this case, the Police Department and Courts Building serves as a case study.

The current boiler system at the Goshen Police Department is comprised of two 84% efficient boilers. These boilers are 20 years old and have reached their rated maximum lifetime. A quote to replace the boilers (currently 84% efficient) with a similar system (85% efficient) came in at \$39,713.

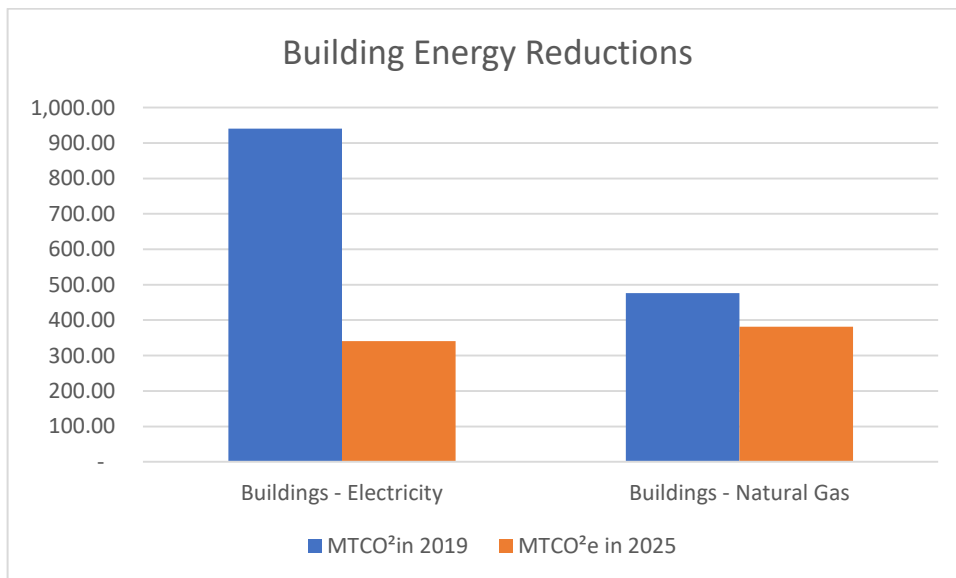
An additional quote was solicited for a higher efficiency model to reduce energy consumption and long-term dependency on natural gas. The vendor quoted 97% efficiency boilers. High-Efficiency boilers can be installed in the same location in the GPD basement; however, the venting requirements would need to be modified resulting in a total quote of \$67,517 to replace the boilers with the highest efficiency available and add the additional venting required.

The boiler replacement would reduce the natural gas consumption at the Goshen Police Department facility by 23.4%. This also reduces Goshen's risk of price volatility, knowing that natural gas has been at its lowest costs in the last few years and will eventually rise.

The savings in Boiler efficiency from 84% to 97% ($.84/.97 = .865$ or a reduction by 13.4%) is combined with a second reduction based on the manufacturer's calculations of the Lochinvar FTX's ability to modulate the gas input from its maximum down to just 10% of that load, making it highly efficient even during warmer temperatures and adding an additional 10% (13.4% plus 10% = 23.4% reduction in energy).

The facility's total estimated annual savings is \$1,509 of its annual \$6,527 natural gas annual bill (2019). Throughout the 20-year life cycle of the boilers, savings accumulate to \$30,180. Considering the venting modifications are a one-time cost, this allows the building to realize the savings with each new boiler replacement. *(The facility is a critical structure and has a double boiler system for redundancy. Savings would be double using a single boiler. Note: The City requested and was granted funding for \$27,804 to add the venting and pay the additional sum to upgrade to 97% efficient boilers. This work is expected to be completed in the summer of 2021.)*

30% Electricity Reduction and 20% Gas reduction



Fleet Analysis

About This Analysis

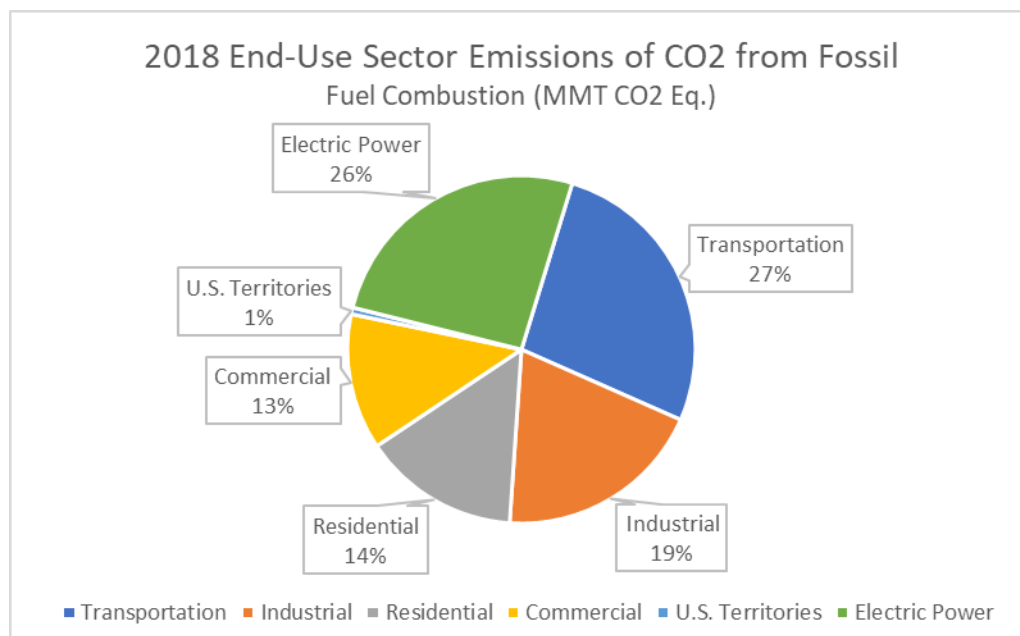
This analysis will focus on gasoline usage, as gasoline is the largest quantity of fuel purchased and is tied to sedans, SUVs, and light-duty trucks. Light-duty vehicles have CAFE standards that are more robust and enforced.

Alternatively, the heavy-duty truck category has seen little or no improvement in emissions reductions with only slightly proposed fuel economy increases with no enforcement.

It should be noted that the CAFE rulemaking was set with a final rule in 2016 to require a fuel economy equivalent of 53.5 mpg or "estimated real-world" mpg of 39 by 2025. In 2018, however, that rule was revisited by a new administration in 2016 and resulted in a final rule (EPA, 2020) requiring fuel economy of 44.1 mpg by 2029 or an "estimated real-world" mpg of 33.2 mpg by 2029. This constriction of fuel economy standards necessitates municipalities and fleet managers consider all options when purchasing fleet vehicles that meet both their economic and GHG reduction goals.

Fuel Economy Standards in the United States

Transportation represents the single largest percentage of emissions when categorized by economic sector in the United States. It accounts for approximately twenty-seven percent of all emissions (EPA, 2018). The EPA tracks the total U.S. emissions and publishes the data in the "Inventory of U.S. Greenhouse Gas Emissions and Sinks" (EPA Publication 430-R-20-002). Figure X shows the 2018 breakdown of end-use emissions by sector. Even though it is the largest sector, transportation has struggled to receive consistent government support in emission reduction through efficiency regulations.



The first regulations to require efficiency standards came through the Energy Policy and Conservation Act of 1975, in large response to the 1973 oil embargo. The standards set average new vehicle economy, as weighted by sales, that a manufacturer's fleet must achieve. By 1985, the new car fleet was required to meet 27.5 mpg, roughly double what it had been in 1975. The standards for light-duty trucks were increased to 22.2 mpg for model year 2007. The standards are set by the National Highway Traffic Safety Administration (NHTSA) and known as CAFE (Corporate Average Fuel Economy) and initially only included passenger vehicles and light trucks (collectively categorized as light-duty vehicles). NHTSA now also sets fuel consumption standards for medium- and heavy-duty trucks.

CAFE standards have offered tremendous benefits to consumers, industry, and government. There have been substantial cost savings to consumers and businesses through reduced fuel consumption. As intended, the standards have reduced the United States' dependency on oil and increasing national security. They have also

strengthened U.S. competitiveness for vehicle sales both domestically and internationally. The CAFE standards delivered both cleaner air and reduced emissions. The advantages have been noticeably successful. Competitive automakers in other countries (Japan, South Korea, the EU, India, and China) have established their standards and targets to surpass the U.S. standards between 2019 and 2020 (Alliance to Save energy, 2018).

Current CAFE NHTSA Standards and EPA Emission Standards are listed below. EPA emission standards become slightly more rigorous with each successive year's fuel economy and average both city, and highway mileage of all of a single automaker manufactures' vehicles.

U.S. FUEL ECONOMY AND EMISSIONS STANDARDS										
Model Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
CAFE (mpg)	33.8	34.8	35.7	36.8	37.3	37.9	38.5	39.1	39.8	40.4
CO2 (g/mi)	255	244	235	226	220	216	213	209	206	202

Note: The examples and scenarios used in this section will focus on the city mileage instead of highway mileage; due to Goshen's size, highway fuel economy almost becomes irrelevant.

Historically the government has given preference to American-owned and manufactured vehicles. However, that distinction has become especially blurry in the current globalized economy. For example, Chrysler is now a subsidiary of the Italian company Fiat. However, when comparing Chrysler to Ford and GM, Chrysler has very few manufacturing facilities *outside* of the U.S.; whereas, Ford and G.M. both have significant operations in every region of the globe. Likewise, foreign-owned companies, such as Toyota and Honda, have substantial manufacturing facilities in the United States, making the "American" distinction more complicated.

The City used approximately 162,000 gallons of fuel in 2019. Gasoline made up the majority of those gallons at sixty-seven (67) percent. Diesel use was thirty (30) percent, and off-road diesel was just three (3) percent.

Fleet Generated MTCO2 in 2019

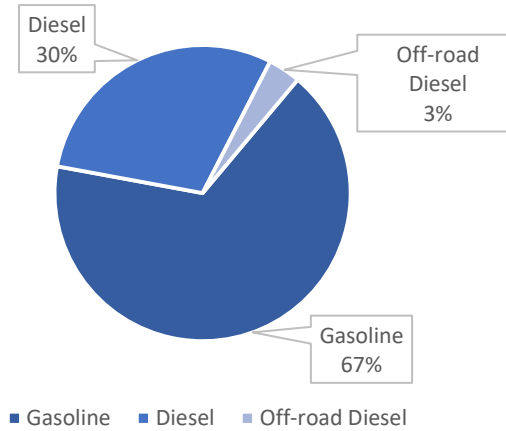


Figure 29 2019 Goshen MTCO2 Emissions Generated

The gasoline-powered vehicles consist of sedans, SUVs, light-duty trucks (F150s), and heavy-duty trucks (F250s, F350s, F550s). The diesel-powered vehicles consist of heavy-duty trucks (fire trucks, ambulances, International and Volvo trucks, sewage vacuum trucks, sweepers, and others). Off-road equipment would include equipment

such as loaders, bobcats, and mowers. These distinctions are important to understand as the fuel use is examined.

----- Breakout item

Calculating CO₂ Emissions from Fleet Vehicles

Internal Combustion Engines

Internal combustion engines burn fuels, worldwide almost exclusively fossil fuels, such as gasoline and diesel. Emissions are calculated by the number of gallons burned, making fuel economy an important consideration. Vehicles that have increased fuel economy use fewer gallons, resulting in fewer emissions released.

Electric Vehicles

Solely electric vehicles that charge from the power grid are only as clean as the grid itself. In Goshen, that grid is owned and operated by the Northern Indiana Public Service Company (NIPSCO). NIPSCO and its parent company NiSource have committed to reducing greenhouse gas emissions by 90% of its 2005 emissions by 2030.

----- Breakout item

Every gallon of gasoline burned releases 8,887 grams of CO₂.

Every gallon of diesel burned releases 10,1880 grams of CO₂.

Gasoline usage can be broken down by Department use. The Police Department uses the largest percentage of gasoline at sixty (60) percent, dominated by sedans and SUVs.

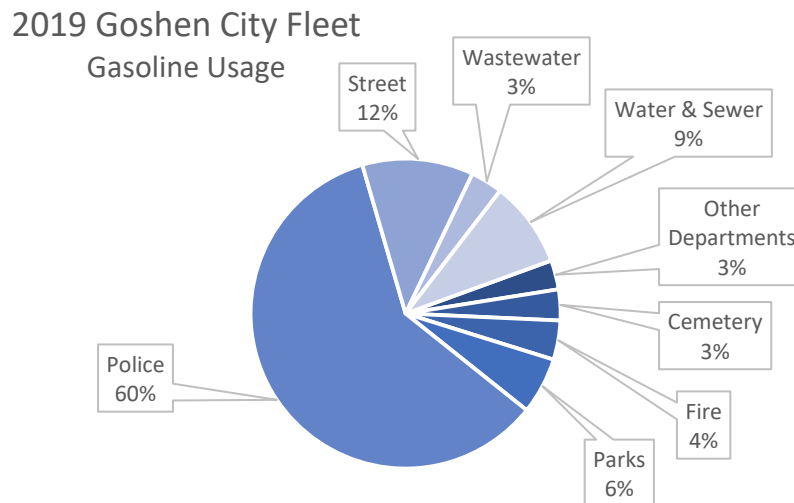


Figure 28 Gasoline Usage By Department, City of Goshen Fleet

Gasoline-powered vehicles can be broken down further by type. The Goshen fleet has 175 vehicles, seventy-six (76) percent of those are light-duty vehicles, fifty-nine (59) percent of the entire fleet is comprised of sedans and SUVs.

Emissions just like costs, are generated by the gallon of use. When vehicles have increased efficiency, they use fewer gallons, that results in fewer emissions released. Every gallon of gasoline burned releases 8,887 grams of CO2.

A Case Study in Increasing Fuel Economy of the Fleet

Sedans are the largest group of vehicles in the fleet (Table 1), however, they are almost the oldest according to the calculated median at 2012. The Median fuel economy for all vehicles is a mere 18 mpg (City). This fuel economy is not

atypical for American municipal fleets. They are replete with these types of low-mpg options, especially in fleets comprised of a majority of police vehicles. Vehicles marketed as *Police Interceptor* vehicles have traditionally been American made marketed and sold on features, not gas mileage. For example, the 2019 inventory had seven 2019 Dodge Chargers, which have a fuel economy of just 19 mpg for city mileage (30 mpg highway).

Table X Breakdown of Gasoline-Powered 2019 Goshen Fleet

Breakdown of Gasoline - Powered Fleet					
Vehicle Description	Number of Vehicles	Highest MPG	Lowest MPG	Median MPG	Median Vehicle Year
All Vehicles	175	54	5	18	2015
Sedans	60	54	16	19	2012
SUVS	43	44	14	19	2016
Lgt Trucks	31	24	13	19	2011
Heavy Trucks	40	14.5	5	8	2015

*For discussion purposes, the following scenarios will use the data below. The police fleet data will be used as it is the largest user of gasoline. A reduction of GHG **will not be successful** without reductions in this category.*

Table X Sample Hybrid and Electric Cars for Understanding Fuel Economy and Emissions

Selections from "Best Hybrid and Electric Cars for 2020 & 2021"				
https://cars.usnews.com/cars-trucks/rankings/hybrid-cars				
Vehicle-Sedan	City MPG	Hwy MPG	Cost-Low	Cost-High
2020 Ford Police Responder Hybrid Sedan	40	36	30035	35300
2020 Toyota Camry Hybrid	51	53	28430	32730
2021 Honda Insight Hybrid	55	49	22930	28840
Tesla Model S Long Range EV	402	402	69420	69420
Nissan Leaf EV	226	226	31600	43900
Vehicle-SUV	City MPG	Hwy MPG	Cost-Low	Cost-High
2020 Toyota Highlander Hybrid	36	35	38200	50200
2020 Ford Escape Hybrid	44	37	28265	35050
2020 Police Ford Explorer Hybrid	21	28	32765	48380

The current fleet of sedans and SUVs has a mean fuel economy of 21.86 mpg. The fleet uses 70,000 gallons of fuel annually and generates 620.9 MTCO₂ annually (Table 3).

In 2020 the police fleet did begin testing two Ford hybrid SUV interceptors, however, the city fuel economy is only 21 mpg. The Toyota Highlander is being used by a couple of police departments in the U.S. although the vehicle is not marketed as an interceptor vehicle. The first scenario replaces twenty-five (25) vehicles with hybrid SUVs that are 36 mpg city fuel economy, such as the Toyota Highlander. That change would increase the mean fuel economy of the entire fleet to 25 mpg and reduce emissions by 84 MTCO₂. That is a reduction in GHG by 13.5%. It would require a minimum capital investment of approximately 1,250,000.

Increasing the mean fuel economy to almost 30 mpg reduces the current emissions of the police fleet by 162 MTCO₂ or a reduction in GHG by 26%. This would require the replacement of 25 vehicles with a mix of sedans and SUVs that average 43mpg city fuel economy. In 2019 Ford began selling a police hybrid sedan with 40 mph city fuel economy. The 25 sedans and SUVs in this example would require a capital investment of *over* 1,075,000.

Table 1 Fuel Economy Scenarios for the Police Fleet

Increasing Gas Mileage Scenarios	Annual Miles per vehicle	End Average MPG	Fleet Gallons Used	MTCO2 per gallon or kWh	Total Annual MTCO2	Fuel Cost per Gallon or kWh	Annual Cost Fuel	No. of Newly Purchased Vehicles	Average MPG of New Vehicles	Average Cost per Vehicle	Total Estimated Purchase Cost
Gasoline Vehicles - Current Fleet of Sedans & SUVs	12000	21.86	70000	0.00887	620.9	\$ 2.00	\$ 140,000	0	0	0	0
Gasoline Vehicles - Scenario 1 - Add 25 Higher Mileage SUVs (Toyota Highlander Hybrid)	12000	25.29	60501	0.00887	536.6	\$ 2.00	\$ 121,003	25	36	\$50,000	\$ 1,250,000
Gasoline Vehicles - Scenario 2 - Add Mix of Higher Mileage Hybrid Sedans & SUVs	12000	29.59	51713	0.00887	458.7	\$ 2.00	\$ 103,427	25	43	\$43,000	\$ 1,075,000
Gasoline Vehicles - Scenario 3 - Update 1/2 Sedan and SUV Fleet with Higher Mileage Vehicles	12000	39.50	38741	0.00887	343.6	\$ 2.00	\$ 77,483	50	50	\$43,000	\$ 2,150,000

A Case Study in Electric Vehicle Options

There is no motorized vehicle at this time that has "zero-emissions." Electric vehicles that charge exclusively from the power grid are only as clean as the grid itself. In Goshen, that grid is owned and operated by the Northern Indiana Public Service Company (NIPSCO). NIPSCO and its parent company NiSource have committed to reducing greenhouse gas emissions by 90% of its 2005 emissions by 2030. Currently, it translates to electricity-producing 1,283.99 lbs of CO₂ per MWh. NIPSCO is projected to reduce their carbon to 92% of their 2005 emissions by 2030.

An electric vehicle driving 12,000 miles annually powered by the 2020 Goshen electric grid would generate approximately 2.15 MTCO₂ annually versus 3.54 MTCO₂ from an equivalent electric vehicle connected to an electric grid emitting GHG at the national average (Figure 5). A vehicle that uses an internal combustion engine with an estimated 18 mpg (the current Mean mpg value of sedans and SUVs combined) that is driven 12,000 miles would generate 5.9 MTCO₂. That value drops to 2.13 MTCO₂ when the vehicle reaches an average fuel economy of 50 mpg.

Fuel savings could also be a consideration. A vehicle with a fuel economy of 18 mpg vehicle would spend \$1,666 (\$2.5/gallon) annually for 12,000 miles and \$833 annually for a 36-mpg vehicle. An electric vehicle would have an annual fuel cost of \$701 for 5011 kWh charging. Electric vehicles would also decrease the City's dependency on gasoline and diesel, which have a high degree of market volatility.

The graph illustrates different vehicle types and their respective CO₂ emissions, including the projected decarbonization of the electric grid.

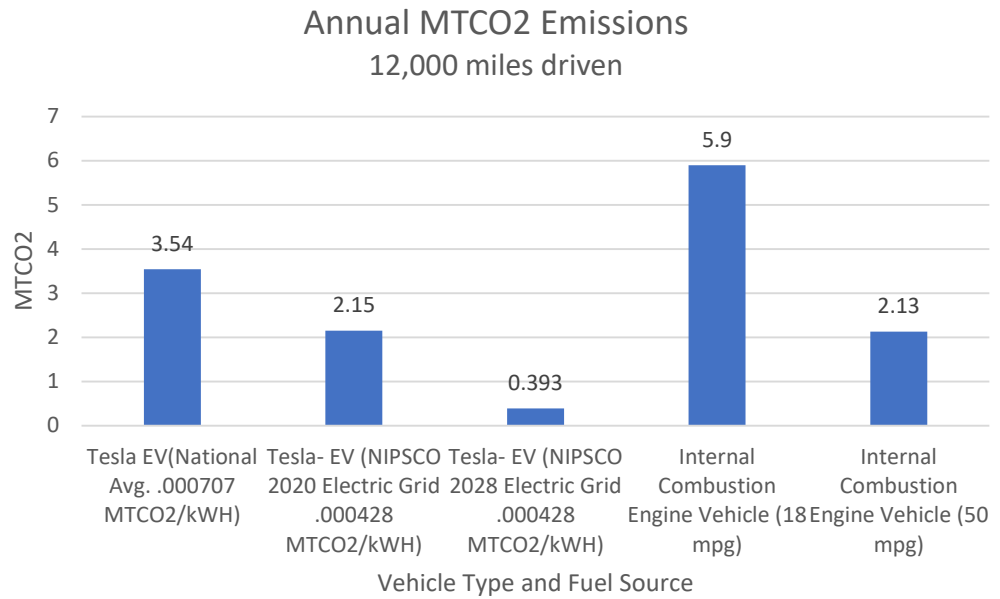


Figure 29 Annual Emissions by Fuel Type and Fuel Economy

The International Council on Clean Transportation, "The Effects of Battery Manufacturing on Electric Vehicle Life-Cycle Greenhouse Gas Emissions." February 2018. www.theicct.org. https://theicct.org/sites/default/files/publications/EV-life-cycle-GHG_ICCT-Briefing_09022018_vF.pdf. Accessed November 9, 2020.

Environmental Protection Agency: Department of Transportation: The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, Federal Register Vol. 85, No. 84 (final rule April 30, 2020).

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Water Conservation and Pollutants

Although agricultural waterways receive the largest overall total pollution from runoff, urban stretches of waterways receive a higher concentration per mile. This fact was the impetus of the stormwater rules that were developed by the EPA and implemented in 1983 for cities with populations over 10,000. Water testing in Warsaw, Indiana showed a nitrate and phosphorus concentration that was six times higher than local agricultural waterways.

Most aquatic life in ditches and streams needs cool water to survive. As water temperatures rise, water is less able to hold oxygen making it difficult for animals with gills to take in enough oxygen or breathe through sediment and pollution laden water. Consequently, there is a rapid decrease in the number of species as the temperature and concentration of pollutants rise. This includes species from macroinvertebrates to fish. Pollution adds to this problem by clouding water increasing thermal heat retention from the sun and feeding algae that also removes oxygen from the water during its rapid life cycle and decomposition.

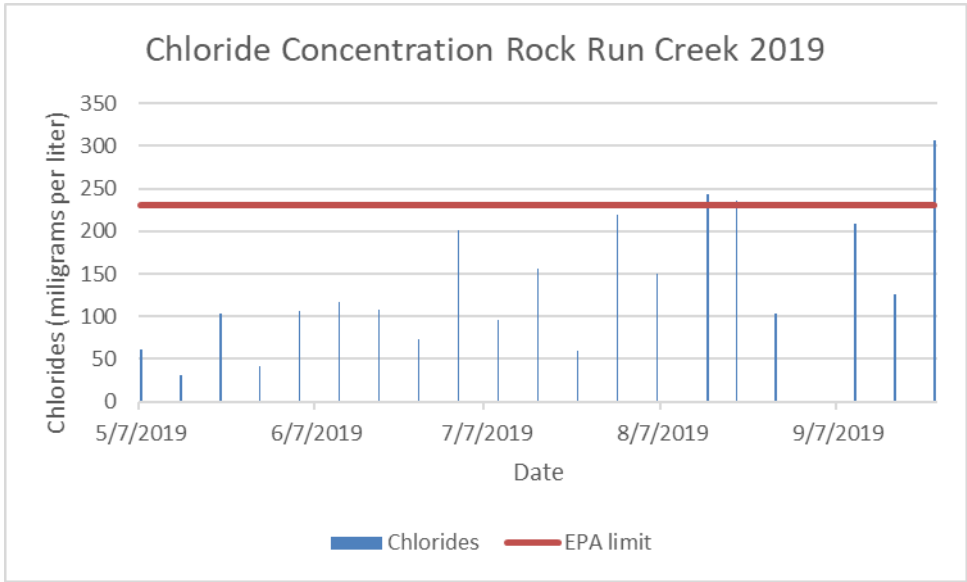
Urban pollution, withstanding industrial pollution, typically comes in the form of phosphorus, nitrates and sediment. The primary sources are vegetative (yard) waste, soil, and fertilizer, not so different than agriculture except for the concentrations. The significant difference is that urban areas are connected to storm sewers. The storm sewers carry the yard waste, sediment, and fertilizer from all over the City and deposit it into the waterways via the storm sewer. Agricultural runoff can be more limited to the areas adjacent to waterways except through extensive tile networks.

Urban areas also have higher concentrations of pavement. During hot summer stretches, that pavement can increase in temperature to 140 degrees or higher. Stormwater runoff from hot pavement is another source of thermal pollution of waterways.

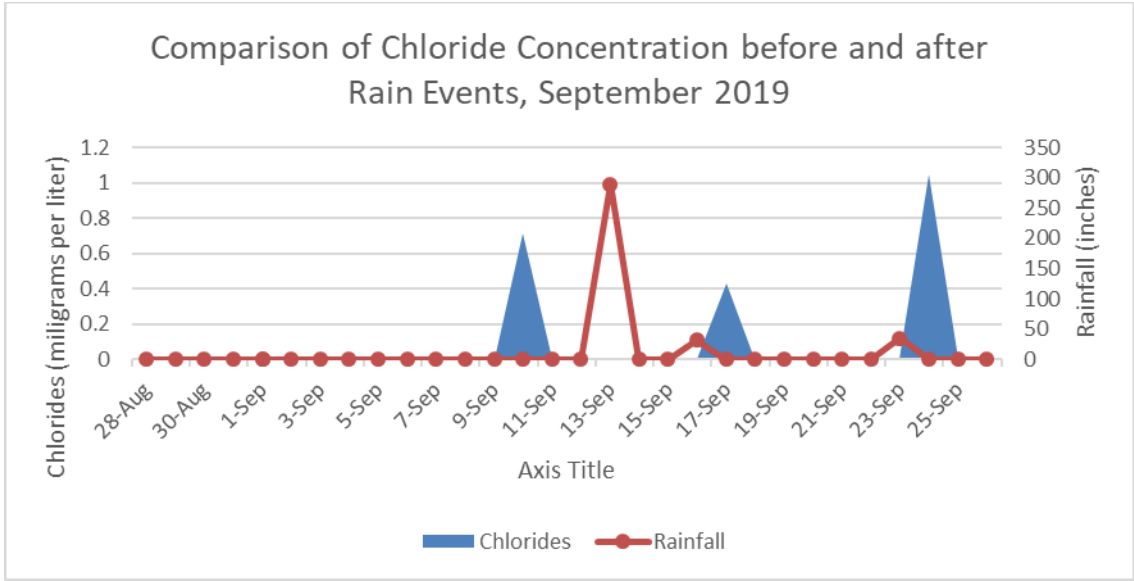
The most important outcomes to improve or stop water quality degradation include pavement (hard surface) reduction, increased pavement shading, and maximizing green infrastructure implementation. This would need to be combined with a well-funded stormwater program, a robust public education program as a way to reach the public and increase community knowledge and action, and a watershed level effort with local partners. As we know, water pollution does not recognize political boundaries.

Road salt

Northern Indiana weather brings snow and ice that can be hazardous to drivers in the winter. Keeping roads clear and driving conditions safe is an important part of the Goshen Street Department's work. Road salt is one of the tools used to accomplish that task. Although road salt can be effective for deicing, it has a negative toll on local waterways and aquatic life. The effects are not limited to the winter season when salt application occurs. Studies have shown that salt penetrates groundwater and will continue to release salt throughout the year. The U.S. Environmental Protection Agency's chronic water-quality criteria for chloride is 230 milligrams per liter. Rock Run Creek had similar findings in 2019 with a low also in May of 41.62 milligrams per liter and a high of 306.26 milligrams per liter in September.



As samples register concentration, increases and decreases in water volume affect results. In May of 2019, there was significant precipitation on May 28 that would have increased water volume. This can be seen in the low chloride concentration samples taken on that day. The charts in figure XX show the relationship between rainfall and chloride concentrations.



Salt applications are not limited to municipal or highway operations but include work by maintenance crews, commercial applicators for private and public parking lots, driveways, sidewalks, as well as by private individuals.

There are non-salt deicers, but generally each has its own negative environmental impact and some may have toxic effects on aquatic life or other organisms.

Are there ways to reduce road salt applications and maintain the same level of safety? In many cases, yes. There are a host of different salting practices that can be adopted to make the most efficient use of the salt that is applied. Some examples include:

Pre-wetting the pavement is one example. A liquid salt brine is applied to the pavement before the storm arrives so that snow and ice does not bond as well to the pavement. This makes plowing more effective and reduces the need for chemical deicers.

There are also new plow-blade designs that make plowing more effective. Some act like a squeegee and others work by breaking adhesion to the pavement more effectively. The result is the same for both. After plowing, the pavement is actually cleaner, so less chemical deicers are needed.

Many more, some of which are included in this report: Strategies to Mitigate Impacts of Chloride Deicers on the Natural Environment (Transportation Research Board/National Cooperative Highway Research Program, http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_449.pdf)

https://www.usgs.gov/centers/umid-water/science/evaluating-chloride-trends-due-road-salt-use-and-its?qt-science_center_objects=1#qt-science_center_objects