DRAFT

City of Vergas Energy & Resilience Plan

PLACEHOLDER for cover page to include:

- Attractive image of the City (Loon? Park and buildings?)

- Logos / organization names
    - City of Vergas
    - WCI
    - CERTs
    - RSDP
    - ESMC
    - Other core orgs to include on cover?

PLACEHOLDER for second page to include acknowledgements (required for ESMC, etc)

ACKNOWLEDGMENTS

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This project was made possible through collaboration between staff and elected officials from the City of Vergas, Empowering Small Minnesota Communities, West Central Initiative and the University of Minnesota. Special thanks to the wide range of community and regional partners who shared their experiences and made this work possible.

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- Julie Bruhn, City of Vergas Mayor

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Special thanks to **Otter Tail Power Company** for their collaboration and providing a baseline assessment to better understand energy use and operational efficiency of city-operated buildings.

Small Minnesota communities have a tremendous number of existing assets: beautiful natural areas; essential built environments; economic strengths, and human capabilities to build upon community strengths, meet their challenges, and move toward their aspirations. The Empowering Small Minnesota Communities (ESMC) program is a community-centered collaboration with the University of Minnesota to support small communities in becoming well-positioned to benefit from federal, state, and local investments.

This report is available for download at: [insert URL, if applicable, or delete this sentence].

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INTRODUCTION & INSPIRATION

The 2023 League of Minnesota Cities (LMC) annual conference was a kick start for Vergas to engage in climate associated action. Information was presented at the conference regarding the unprecedented funding opportunities and stories were shared from various communities on impact projects. The information sparked interest and action.

The mayor at that time, Julie Bruhn, presented the opportunities to the City Council to enhance City of Vergas resiliency and sustainability. The Council voted to make a commitment to climate action and granted the Mayor the authority to proceed. With the older municipal building infrastructure, a focus on energy was deemed the most beneficial approach as there would be energy and fiscal efficiencies and savings affecting all residents.

The year that followed entailed identifying resources, establishing contact, and participating in training, networking calls, and investigating funding opportunities. Three grants were submitted and partnerships were formed with Clean Energy Resource Teams (CERTS), UMN Empowering Small Minnesota Communities (ESMC), UMN Regional Sustainable Development Partnerships (RSDP), West Central Initiative (WCI), and Vergas becoming the 149th GreenStep City in Minnesota. Primary goals were to achieve energy efficiencies and clean energy for the City of Vergas municipal buildings and operations. Goals also included engaging in a positive energy initiative with direct benefits to the community fiscally and environmentally and inspiring residential and commercial engagement to ignite interest in energy efficiencies and community sustainability.

Two grants were received, awarded by ESMC & RSDP in May 2024, that had a focus on rural settings; less than 5,000 population. The grants focused on assessing and trending energy usage and having energy audits conducted and building enclosure evaluations. The data would serve to guide planning and action to promote and achieve energy efficiencies and use of clean renewable energy.

It was a journey and learning curve requiring commitment and persistence that resulted in strong partnerships and groundbreaking work in understanding energy in the municipal buildings and moving the community forward toward resiliency and sustainability.

OBJECTIVES OF THE PLAN

The purpose of this plan is to provide the City of Vergas with a clear and actionable framework to address clean energy and resilience opportunities, climate challenges, drawing on recommendations from the Empowering Small Minnesota Communities (ESMC) and the Otter Tail Power Company (OTPCO) assessments. This plan reflects Vergas' desire to lead by example, demonstrating that small communities can define and act on their evolving infrastructure, energy and resilience needs.

Planning began with the City's 2019 Capital Improvement Plan (CIP), which laid the groundwork for long-term infrastructure management. Building on this foundation was the 2019 Housing Study and the 2022 Comprehensive Plan. The Housing Study was conducted through a resident survey to assess current and future housing needs. The Comprehensive plan entailed several engagement sessions, facilitated by WCI, which resulted in a vision and plan through 2036. The plan outlined aspects of safeguarding local assets, preserving the natural beauty of the community, and creatively meeting future housing needs was a framing principle across all the studies.

In the fall of 2024, a baseline assessment to better understand energy use and operational efficiency of city-operated buildings was completed by Otter Tail Power Company. With assistance from the Center for Sustainable Building Research (CSBR) at the University of Minnesota, the envelope of each city building was assessed and evaluated for improvements. CSBR generated a report based on the findings and recommendations were made for each facility. West Central Initiative is working with the city to determine the needs for future critical loads to determine battery backup requirements, and solar energy potential as well as needs for the event center for use as an emergency shelter and resilience hub.

In the spring of 2025, the city applied for and received the Minnesota Pollution Control Agency (MPCA) Climate Impact Implementation grant. This will allow the city to complete weatherization measures of adding insulation on the fire hall, event center, and municipal liquor store, as recommended by CSBR. They will also be installing refrigeration controls on the cooling equipment at the liquor store. Throughout this process, the city has been able to begin tracking projects and measure efficiency gains over time through the MPCA GreenStep Cities program and B3 Benchmarking. This helps Vergas gain additional recognition through the Minnesota GreenStep Cities program. With the plans for the addition of a solar array, the City is working toward becoming a designated SolSmart community in an effort that supports the adoption of solar-friendly policies, ordinances, and streamlined permitting processes that reduce the soft costs of solar energy deployment.

The Energy and Resilience plan also aims to protect local infrastructure from the growing risks of extreme weather events due to climate change, and to ensure Vergas remains a safe, healthy place for all residents. Community engagement has been central to shaping this vision. Through the Spring 2025 Community Input Survey, which was distributed via the Maple Syrup Fest event, city communications, the City Office, and QR codes, residents shared their perspectives to help guide the energy and resiliency plan.

By aligning community goals with climate preparedness and infrastructure investment, this plan positions Vergas to competitively secure funding and implement sustainable improvements for years to come. During the Spring 2025 community Input Survey, residents had the opportunity to engage with the planning process and express their interest in continued involvement. As part of this effort, individuals were invited to be considered for the advisory committee that will support the implementation of the plan. A chair and five members were selected for the committee:

METHODS & RESEARCH

1. Existing Planning Document Review

The City of Vergas has strategically positioned itself to achieve significant advancements in climate resilience, energy efficiency, and community well-being by building upon three foundational planning documents: the 2019 Capital Improvement Plan (CIP), the 2020 Housing Study, and the 2022 Comprehensive Plan. This report investigates the alignment between these efforts, provides a sequencing framework for implementation, identifies grant funding opportunities, and highlights important technical considerations to optimize system investments to improve energy efficiency and improve facility resiliency.

It is critical to recognize that implementing building envelope improvements recommended by the Center for Sustainable Building Research (CSBR) will lower facility energy demands. As a result, mechanical system sizing recommendations from the Otter Tail Power Company (OTPCO) audit may need to be recalibrated. The implementation of the MPCA grant provides funds for the weatherization efforts and a blower door test will optimize mechanical systems sizing. Improved building shell performance will reduce the overall load of the mechanical heating and cooling systems. This presents opportunities for right-sizing the equipment, saving upfront capital costs, improving system longevity, and achieving better overall building performance and comfort.

2. Energy Audits and Benchmarking

Universal Recommendation:
Across all four buildings, the Center for Sustainable Building Research (CSBR) recommends blower door testing as a high priority. While several clear air leakage pathways were identified through visual inspection and thermal imaging, others likely remain undetected. Blower door tests, especially when combined with thermal imaging or smoke testing, will help the City quantify total air leakage and precisely locate less visible gaps. This diagnostic approach is essential to efficiently prioritize weatherization improvements during the implementation of the MPCA grant. This additional exploration will determine the sequence of investments and reduce wasted effort and cost across the City’s building portfolio.

Among the four facilities, the Event Center and Fire Hall have emerged as the most appropriate candidates for Resiliency Hubs, due to their size, layout, and accessibility. The Event Center is actively used for large gatherings, but current electrical limitations already exist, experienced by frequent breaker trips when auxiliary equipment is connected, posing a challenge for future electrification. Identifying critical loads to be powered by backup power in the event of a power outage and upgrading the electrical panel should be considered alongside perimeter insulation and air sealing. The Fire Hall has favorable energy performance but suffers from significant air leakage around overhead doors and inadequate attic insulation, both of which impact its ability to maintain comfort and efficiency during emergencies.

The City Office is the best-performing building in terms of Energy Use Intensity (EUI), showing tight envelope performance and full reliance on electric mini-split systems. Minimal upgrades are needed here beyond continued monitoring of winter heating performance. Finally, the Liquor Store, while architecturally sensitive due to its historical value, offers mid-tier performance. It would benefit from targeted air sealing at known leakage points like the elevator shaft and rear entry, but major overhauls are less cost-effective in its current state.

Summary Table of Building Characteristics and Priorities

Category	1. Event Center	2. Fire Hall	3. Liquor Store	4. City Office
Primary Use	Assembly, Kitchen, Community Hub	Emergency Services, Meeting Space	Retail (Liquor + Second-hand)	Office/Admin + Shared w/ Post Office
Square Footage	~7,200 sq ft	N/A	~7,840 sq ft	N/A
Energy Use Intensity (EUI)	37.1 kBtu/ft²·yr	23.7 kBtu/ft²·yr	32.8 kBtu/ft²·yr	17.8 kBtu/ft²·yr
Resiliency Hub Potential	Yes – primary gathering site	Yes – emergency use	No – mixed-use and structural limits	No – limited capacity
Key Observations	Breaker trips with load; slab heat loss; drafty doors	Overhead door leakage; attic poorly insulated	Penthouse and rear leakage; economizer in place	Excellent performance; no gas; minimal heat loss
Recommended Focus	Upgrade electrical panel; weatherization for slab and doors	Air sealing and attic insulation	Targeted air sealing; preserve historic features	Monitoring and solar feasibility
Upgrade Priority	**High – resiliency and energy**	**High – resiliency and heat loss**	Medium – selective improvements	Low – maintain existing systems

Detailed checklists, energy savings models, and cost estimates for each facility are located in **Appendix A: Building Energy & Retrofit Plans**.

Important Note:

If CSBR's envelope recommendations are implemented first, building energy consumption will certainly drop. This means OTPCO's heat pumps and HVAC sizing recommendations will likely **oversize systems** unless recalculated. Right-sizing these systems after envelope improvements will reduce capital costs, maintenance, and operational inefficiencies. **Reassessing mechanical design post-envelope upgrades is critical.**

	Efficiency Work (CSBR)	Potential impact on Mechanical Upgrades (OTPCO)
Fire Hall	Overhead door sealing, attic insulation	Smaller air-to-water heat pump, lower heating load
Event Center	Slab insulation, door air sealing	Downsized HVAC system, improved occupant comfort
Liquor Store	Penthouse air sealing, cooler improvements	Lower refrigeration and HVAC loads
City Office	Already efficient envelope; minor lighting upgrades	Minor HVAC recalibration needed

3. Cross-Document Synergies and Actionable Opportunities

Public Building Retrofits and Renewable Energy Integration

The CSBR findings also highlight opportunities to enhance municipal facilities identified in the CIP and Comp Plan:

	Energy Upgrade Priority	**Alignment with Existing Plans**
Fire Hall	Weatherstrip overhead doors, attic insulation	CIP mentions facility maintenance; Comp Plan supports efficiency retrofits
Event Center	Install heat pumps, insulate slab edges	Identified in both CIP (Long Lake Park upgrades) and Housing Study (public amenities to retain residents)
Liquor Store	Air sealing elevator shaft, LED lighting upgrades	Enhances a major retail anchor in the local economy, reduced cost will increase business profitability.
City Office	Minor LED upgrades, explore solar capacity	CIP improvements combined with resilience goals

4. Community Engagement and Local Leadership

- Distributed a community-wide energy and climate survey in Spring 2025 through the City Office, Maple Syrup Fest, and digital QR codes.
- Collected feedback on energy priorities, barriers, awareness of climate risks, and infrastructure needs.
- Formed a volunteer **Energy and Resiliency Committee** made up of residents, local leaders, and city staff to review findings, advise on project phasing, and support implementation.

5. Land Use and Housing Context

- Incorporated data from the 2020 Vergas Housing Study to assess local housing stock, development pressures, and population trends.
- Identified infrastructure gaps, vacant parcels, and the need for services like sewer and water extensions for growth areas.
- Considered the role of senior housing and infill development in future energy planning.

6. Policy Alignment and Funding Strategy

- Implementing B3 Benchmarking to track building consumption and earn recognition through Green Step Cities
- Began working toward SolSmart designation to encourage solar adoption by streamlining permitting and reducing soft costs.
- Review local ordinances and zoning codes for opportunities to support renewable energy and resilient infrastructure.
- Aligned project timelines with eligibility windows for IRA funding, USDA rural energy programs, and GreenStep Cities incentives.
- Develop

COMMUNITY ENGAGEMENT

Energy & Resilience Action Committee

The Energy & Resilience Action Committee emerged directly from the 2025 Community Resilience & Energy Survey, which revealed broad support for local sustainability, energy affordability, and climate preparedness efforts. Recognizing this momentum, the City of Vergas established the committee to guide both the development and ongoing implementation of the

Energy and Resiliency Plan and to help advance the City's progress in the Minnesota GreenStep Cities program.

Energy & Resilience Action Committee Members:

- Chair Julie Bruhn
- [Insert Energy & Resilience committee member names here].

The committee's continuing role is to:

- Prioritize Vergas' energy and resilience goals, actions and projects
- Translate evolving community input into clear, actionable steps
- Ensure implementation of adopted action items
- Maintain the Energy and Resiliency Plan as a **living document**, updated as needed to reflect new challenges, funding opportunities, or shifting local priorities
- Propose/ implement short-, medium-, and long-term goals that respond to the city's changing needs over time

This structure ensures the plan remains a tool for action—not just a record of intent. It also provides a pathway for transparency, community ownership, and sustained accountability.

Vergas Energy & Resilience Community Survey

The 2025 Community Resilience & Energy Survey was shaped by Vergas City leaders, RSDP, CSBR and CERTS and built upon the outreach foundation laid during the 2022 Comprehensive Plan. The survey was designed to gauge resident concerns about energy affordability, infrastructure vulnerabilities, and preparedness for extreme weather, while also capturing public interest in renewable energy options and environmental protections.

Distributed online and in print, the survey was promoted through local businesses, city communications, and public events. It drew 91 responses, with input from both full-time residents and non-residents, reflecting Vergas's strong seasonal and regional connections.

However, with roughly 61% of responses coming from non-residents, the need for additional outreach targeting year-round residents is clear. Future engagement strategies might include presence at school events, inserts in utility bills, or pop-up sessions at event and faith-based gatherings to capture a more comprehensive snapshot of full-time resident needs. These sessions can be facilitated with regional partner organizations.

Survey Summary

The survey (91 responses: 35 residents, 56 non-residents) indicates strong community interest in planning for extreme weather and resilience, with an engaged but older resident demographic and limited youth representation in the survey. Respondents expressed high concern about

impacts to water quality and infrastructure, yet many lack backup plans for utility disruptions, revealing a key preparedness gap and opportunity for education and community coordination.

While current home temperature discomfort is relatively low, interest in learning about efficiency and resilience suggests proactive outreach could be effective. Heating sources vary (primarily natural gas among residents; electric and propane among non-residents), highlighting the need for targeted weatherization and resilience strategies. A moderate segment of residents is open to reducing energy costs, offering a starting point for pilot programs and peer-led engagement.

Overall, respondents strongly support environmental protection, energy efficiency, and streamlined renewable energy efforts. Planning priorities include: expanding emergency preparedness, protecting natural systems, strengthening infrastructure resilience, engaging youth, and providing accessible, practical education and incentives to build long-term community resilience.

Workshops & Listening Sessions

In addition to the survey, a series of community workshops and informal listening sessions were held throughout 2025. These in-person opportunities created space for residents to reflect on lived experiences—such as recent utility outages, home energy burdens, or noticeable changes in weather patterns—and to voice hopes for more resilient local infrastructure and better access to clean energy options.

These sessions also helped frame resilience in a way that resonated with rural community life: not just about technology and infrastructure, but about social cohesion, trusted networks, and protecting what makes Vergas a vibrant place to live.

Next Steps: Deepening Engagement and Peer Learning

Moving forward, the Energy & Resilience Action Committee will play a central role in refining goals, confirming priorities, and tracking implementation progress. To strengthen this work the City, together with the West Central Initiative, is exploring a learning exchange trip to the University of Minnesota–Morris, a statewide leader in rural energy innovation.

The Morris campus demonstrates technologies such as:

- Agrivoltaics (dual-use solar and agriculture)
- Wind energy and battery storage
- Integrated district-scale clean energy planning

This peer learning opportunity would give city council members, committee participants, and community partners a first-hand look at what's possible in small but visionary communities and inspire conversations around partnerships, pilot projects, and capacity-building for Vergas.

In the spirit of community leadership and practical innovation, this next phase will ensure that Vergas not only plans for a more resilient future, but actively builds it guided by the voices of its residents, the leadership of its committee, and the creative energy of its regional peers.

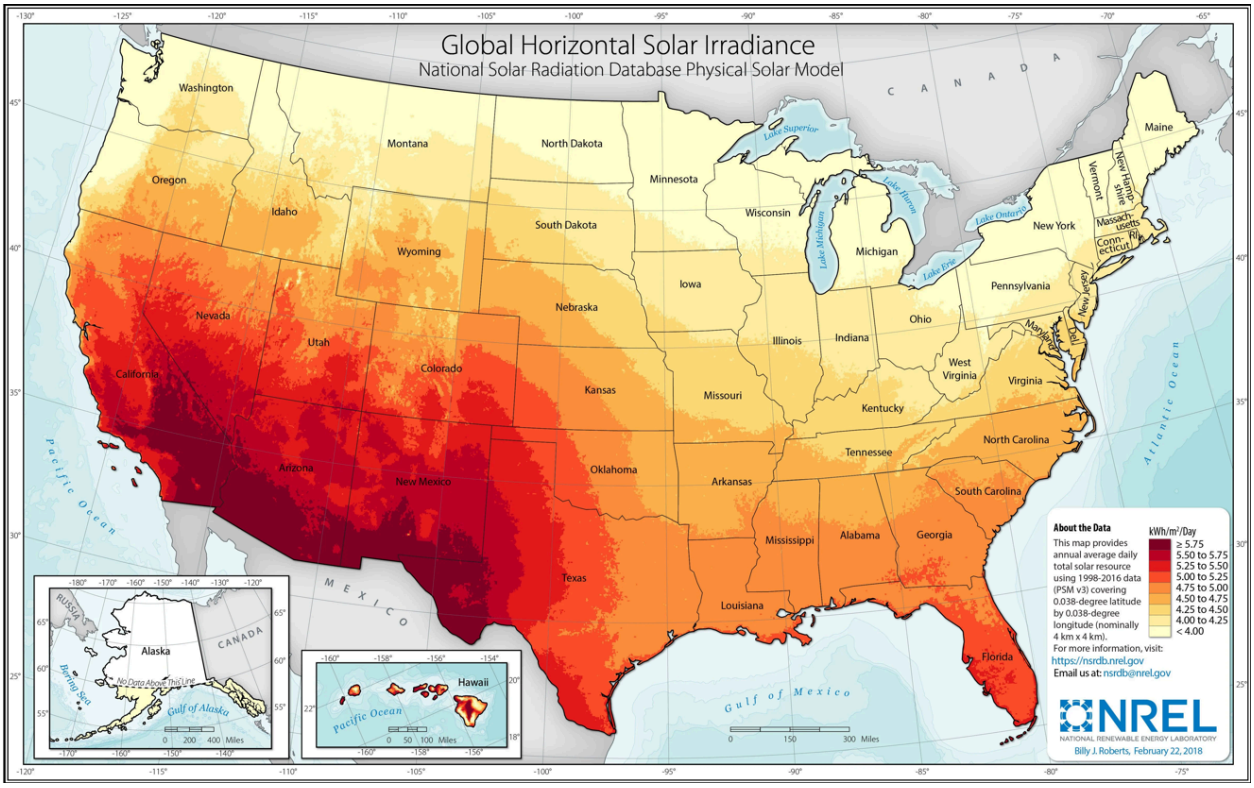
RENEWABLE ENERGY POTENTIAL

Solar Energy Potential in Minnesota and Opportunities for Vergas

The City of Vergas has taken an important step by conducting a solar site assessment for the Event Center. This proactive move supports the city's broader goals of energy efficiency, sustainability, and long-term cost savings. As Vergas continues to expand solar to the other sites it is important to prioritize the energy efficiency of the site so that the solar arrays can be properly sized to the load.

Solar Energy Potential

According to the National Renewable Energy Laboratory (NREL), Minnesota has strong solar potential despite its northern latitude. Using the *U.S. Annual PV Solar Radiation Map* and Minnesota-specific data from the Minnesota Department of Commerce, the state receives 4.5 to 5.0 kWh/m²/day of solar energy—comparable to areas in Germany, one of the world's solar leaders.



NREL Solar Maps (U.S.): https://www.nrel.gov/gis/solar.html
MN Solar Suitability App: https://solar.maps.umn.edu/

The *University of Minnesota Solar Suitability App* provides parcel-level analysis across the state. In Otter Tail County—including Vergas—many rooftops and open lands are rated as "good" or "excellent" for solar, indicating high solar radiation and several of the Vergas sites have favorable roof tilt/orientation.

This data, based on LiDAR and solar irradiance modeling, shows that even with seasonal variability, Minnesota's solar resources are sufficient to support distributed energy systems. Tools like the MN Solar App not only help identify optimal sites, but also will assist in planning future solar developments by visualizing annual output estimates.

For example,(enter details from the WCI Event Center assessment). When paired with efficient equipment upgrades and net metering policies, this can cover a significant portion of a small commercial or residential energy load.

Minnesota's solar development is further encouraged by state legislation such as the Solar Energy Standard (requiring 1.5% of investor-owned utilities' retail electricity sales to come from solar by 2020) and initiatives by Clean Energy Resource Teams (CERTs) to support rural communities.

What This Means for Vergas

Even in northern regions, solar performs reliably due to:

- **Cold Climate Efficiency:** Solar panels operate more efficiently in colder temperatures, improving performance on sunny winter days.
- **Seasonal Production:** While winter has shorter days, summer months make up for this with long daylight hours—ideal for energy generation.
- **Net Metering & Incentives:** Minnesota's policies allow homeowners and businesses to receive credit for excess energy produced, enhancing return on investment.

In Vergas, this means:

- The Event Center's solar assessment is viable and with the gap funding provided by WCI the breakeven point occurs within two years of operation this will lead to lower operating costs.
- Other municipal buildings like the Fire Station, Liquor Store, and City Shop may also be good solar candidates when paired with energy efficiency upgrades.
- Energy benchmarking and retrofits—like those already proposed in the ESMC & OTPCO report—can help ensure solar is deployed cost-effectively by reducing the building's baseline energy demand first.

Solar energy is not only viable in Vergas, it is a smart investment. The Event Center solar assessment is a stepping-stone toward broader clean energy adoption. By embracing solar, the community can:

- Reduce energy costs.
- Build climate resilience.
- Attract sustainability-minded residents and businesses.

Renewable Energy Opportunities & Actions

To support decision-making and implementation, the City has developed a practical checklist to evaluate each city-operated building for upgrade opportunities. This tool helps prioritize projects based on feasibility, impact, and alignment with available funding.

The checklist will include:

Energy Efficiency Opportunities:

- Identified simple retrofits such as LED lighting, occupancy sensors, and weather sealing.
- Evaluated building envelopes for insulation upgrades and air infiltration improvements.

Mechanical System Upgrades:

- Reviewed age, efficiency, and operational performance of existing HVAC systems and water heaters.
- Identified opportunities to transition to air-source or air-to-water heat pumps and phase out aging gas systems.

Solar Readiness and Resilience Potential:

- Assessed rooftops and adjacent areas for solar installation potential.
- Calculated critical electrical loads to inform solar-plus-storage resilience strategies.

To support effective implementation, it is recommended that the Energy and Resilience Committee identifies upgrades into short (5 years), medium (10 years), and long-term (15 years) phases based on cost, impact, and urgency. This phased approach would help prioritize quick wins while allowing time to plan for larger capital improvements. Aligning each project type with available incentives: Tax Incentives, utility rebates, and GreenStep Cities actions can also maximize financial leverage and improve building conditions.

Additionally, integrating findings into the B3 Benchmarking platform would allow for ongoing performance monitoring and energy tracking across city-owned buildings. This data-driven approach could inform future updates to the Capital Improvement Plan (CIP), support grant applications, and help the City assess the effectiveness of implemented projects over time.

CONCLUSION & NEXT STEPS

The Vergas Energy and Resilience Plan provides a practical, community-driven roadmap for strengthening infrastructure, improving energy performance, and preparing for climate-related risks. Grounded in past planning efforts and informed by technical assessments, grant investments, and community input, the plan positions Vergas to act strategically by protecting local assets, supporting residents, and demonstrating how small communities can lead through thoughtful, phased action. By aligning policy, funding, and implementation, Vergas is building a resilient foundation that will sustain community well-being, environmental stewardship, and economic vitality for years to come.

Key Takeaways & Action Priorities

- Build on existing plans: Leverage the CIP, Housing Study, and Comprehensive Plan as a coordinated framework for energy and resilience investments.
- Implement high-impact facility upgrades: Prioritize weatherization, air sealing, insulation, and blower door testing to reduce energy demand and right-size mechanical systems.
- Develop resilience hubs: Advance the Event Center and Fire Hall as emergency-ready facilities with backup power, improved electrical capacity, and enhanced building performance.
- Strengthen data-driven decision-making: Use B3 Benchmarking, GreenStep Cities, and ongoing audits to track performance and guide investment sequencing.
- Advance clean energy adoption: Pursue solar development, SolSmart designation, and solar-friendly policies to reduce costs and support long-term energy independence.
- Prepare for extreme weather: Integrate climate projections, infrastructure protection strategies, and emergency planning into capital and operational decisions.
- Engage community leadership: Support the Energy and Resiliency Committee and continue resident engagement to guide implementation and build local ownership.
- Align housing and land use planning: Address growth, senior housing needs, and infrastructure extensions while incorporating energy efficiency and resilience.
- Maximize funding opportunities: Coordinate project timing with state and federal grants, utility programs, and incentives to accelerate implementation.
- Lead by example: Position Vergas as a model for rural communities demonstrating that strategic planning, partnerships, and local leadership can drive meaningful climate and energy action.

GOALS & PROGRESS (this section will be populated once the Energy & Resilience Committee selects their priority goals & projects for the next five years)

EXAMPLE

Goal: Install at least one type of renewable energy technology on every municipal building by 2035.

Planning	Policy	Projects	Progress
Plan and budget for motor maintenance and upgrades to assure the most energy-efficient, durable, and appropriate equipment is available when upgrades or breakdowns occur. *GSC BP 20.2*	Adopt a renewable energy ordinance that allows, enables, and encourages appropriate renewable energy installations. *GSC BP 26.1*	Install renewable energy technology [Solar PV, Solar Thermal] on all municipally owned buildings. *GSC BP 26.5*	2025 - - 2026 - - 2027 -

APPENDICES

Appendix A: UMN CSBR Building Assessments Report & Recommendations
Appendix B: Otter Tail Power Building Assessment: Energy Use & Operational Efficiency
Appendix C: Summary of Existing City of Vergas Planning Documents
Appendix D: Community Survey Administration, Questions & Analysis
Appendix E: Minnesota Solar Energy Industries Association: Does Solar Energy Work in Minnesota?
Appendix F: Using This Plan to Write Grants
Appendix G:
Appendix H:

APPENDIX A

UMN CENTER FOR SUSTAINABLE BUILDING RESEARCH – CITY OF VERGAS BUILDING ASSESSMENTS & RECOMMENDATIONS

Four buildings owned by the City of Vergas were studied by the Center for Sustainable Building Research (CSBR) in 2024 and 2025 the Fire Hall, City Office, Municipal Off-Sale Liquor Store, and the Event Center.

The intent of the study was to:

1. Examine and document the historical energy use of the buildings (gas and electricity). Energy use is normalized into a whole-building metric of thousand Btu per square foot, per year (kBtu/ft2*yr). This is known as Energy Use Intensity (EUI). This unit enables comparison between buildings in the City's portfolio, and similar buildings in other locations.
2. Identify sources of energy waste that are focused on the building enclosure, since mechanical system substitutions had already been identified in an energy audit done by Otter Tail Power and Frontier Energy.
3. Document costs for recommended upgrades, using contractor bid amounts.
4. Use energy models where possible to predict savings. Note that savings from air leakage reduction are difficult to quantify, especially since the buildings have not received blower door tests and their existing air leakage is therefore unknown.

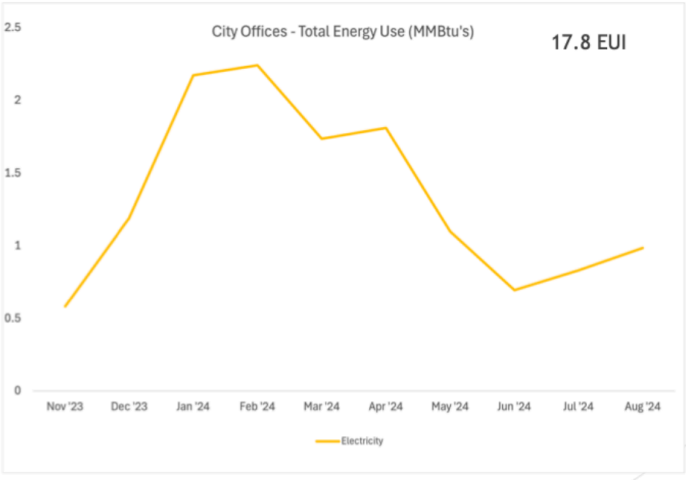
CSBR staff made an initial visit to Vergas on August 20th 2024 to perform a brief survey of the four study buildings and make preliminary observations on enclosure characteristics. We returned Oct 28th, 2024, when colder weather would enable visualization of heat flow through parts of the building enclosure by using a thermal imaging camera. The results of this investigation are as follows:

City Office

Building Overview

The Vergas City Office is a single-story structure with no basement, constructed in 1972. It shares approximately half its footprint with the U.S. Post Office. The facility is entirely electric, utilizing mini-split heat pumps for both heating and cooling, with no natural gas consumption. The Energy Use Intensity (EUI) is 17.8 kBtu/ft²·yr, significantly below the national median for small office buildings and notably efficient relative to comparable local facilities such as the Frazee Fire Hall / City Office (EUI 89.92).

Thermal imaging investigations conducted during the Center for Sustainable Building Research (CSBR) study in fall 2024 revealed no major thermal bypasses or insulation deficiencies. Electricity usage peaks during winter due to decreased efficiency of air-source heat pumps in extremely cold temperatures; however, air conditioning demands remain modest throughout the year.



Identified upgrades are based on visual and thermal imaging surveys. A blower door test is recommended to quantify overall envelope tightness and locate additional air leakage beyond visually confirmed areas.

Recommendations Checklist

Weatherization Efforts:

- No significant thermal bypasses were observed during thermal imaging inspections.
- **Recommendation:** Conduct blower door testing to identify and quantify any hidden sources of air leakage and prioritize improvements accordingly.
- **Estimated Cost:** TBD (dependent on blower door results)

Mechanical Systems Upgrades / Critical Loads:

- Heating and cooling are provided by air-source mini-split heat pumps.
- **Recommendation:** Install smart thermostats to improve temperature control, increase operational efficiency, and reduce energy consumption during winter peak demand.
- **Estimated Cost:** $200–$600 per thermostat (depending on selected model and labor)

Renewable Energy Opportunities:

- The roof appears suitable for a small-scale solar PV system to offset electric usage.
- **Recommendation:** Perform a solar site assessment to evaluate rooftop capacity and payback potential.

Water Environment (Future Category):

- No water environment or stormwater infrastructure recommendations at this time.
- Future integration of greywater reuse or rain garden strategies could be considered if site modifications occur.

Engineering Documentation:

- Future engineering documentation from Energy Conservation Grant (WCI)

Fire Hall

Building Overview

The Vergas Fire Hall consists of two equipment bays constructed at different times, a large meeting room, and several support areas including restrooms and offices. The building is infrequently occupied. Space conditioning relies on a mix of natural gas and electric systems, with ventilation supported by two energy recovery units (ERVs) that help mitigate heat loss during air exchange.

The building's Energy Use Intensity (EUI) is 23.7 kBtu/ft²·yr, significantly lower than the comparable Frazee facility (EUI 89.92). However, several energy inefficiencies were identified during the CSBR study, particularly related to air leakage and insufficient insulation in critical areas.

Weatherization Efforts:

- Air leakage was observed around equipment bay overhead doors (evidenced by dirt streaks, daylight penetration, and thermal imaging).
- The West equipment bay attic is under-insulated, and the attic hatch is not sealed.

- **Recommendations:**

    - Air seal all overhead doors.
    - Insulate attic floor to R-50.
    - Install weatherstripping to seal the attic hatch.

- **Estimated Cost:** $9,200 (labor and materials)

Mechanical Systems Upgrades / Critical Loads:

- Combination of gas-fired heating and electric systems used for conditioning.

- **Recommendation:** Continue preventive maintenance and inspection of ERVs to ensure efficient recovery of heat and minimize winter losses.

Renewable Energy Opportunities:

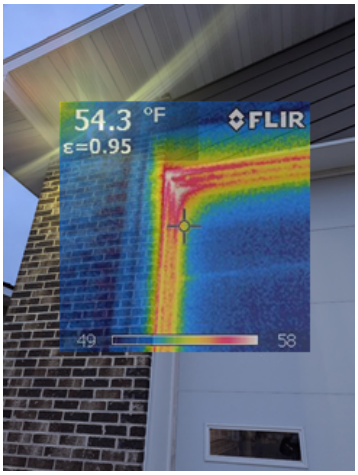
- Consider small-scale solar PV systems for lighting and auxiliary power needs.
- A resilience-oriented battery system could also support emergency operations.

Water Environment (Future Category):

- No specific stormwater or water conservation issues were identified.
- Opportunities may exist to integrate native landscaping or bioswales in future site upgrades to improve drainage and reduce runoff.

Engineering Documentation:

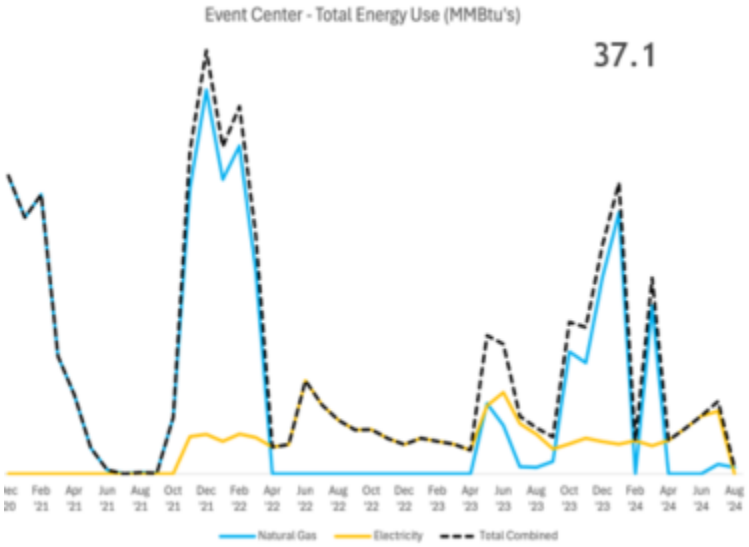
- Future engineering documentation from Energy Conservation Grant (WCI)



Event Center

Building Overview

The Vergas Event Center, a repurposed former school building, spans approximately 7,200 square feet and includes a large assembly hall, commercial kitchen, and multiple support spaces such as restrooms. The building relies on natural gas-fired furnaces for heating and standard electric air conditioners for cooling. Warm air is distributed via ducts embedded in the ground below the concrete slab.



The building has an Energy Use Intensity (EUI) of 37.1 kBtu/ft²·yr, which is commendable compared to similar facilities like the Detroit Lakes Community Center (EUI 119.95). While electricity use remains consistent year-round, gas consumption spikes during winter months due to heating needs.

Weatherization Efforts:

- Significant energy loss was identified through the building's **exposed slab edge**, which is exacerbated by under-slab ducting and perimeter heating registers.
- Air leakage was also detected at **five storefront entry doors** via thermal imaging and occupant reports.

- **Recommendations:**

    - Install perimeter insulation at slab edge, extending ~2 feet below grade.
    - Replace or repair weatherstripping on 5 exterior doors.

- **Estimated Cost:** $8,000 (labor and materials)

- **Projected Energy Savings:** 38% reduction in heating energy use

Mechanical Systems Upgrades / Critical Loads:

- Natural gas furnaces and standard air conditioning provide HVAC.
- Ducts are embedded in the slab and may be difficult to upgrade, but air sealing and zoning strategies may enhance performance.
- **Recommendation:** Investigate control upgrades or smart thermostats for improved load management.

Renewable Energy Opportunities:

- The roof has low slope but sufficient surface area for solar.
- A **24 kW solar PV system** could produce approximately 27,000 kWh/year, covering **120%** of historical electric use (not including gas offset).
- **Recommendation:** Explore solar PV installation with optional battery storage for resilience functions.

Water Environment (Future Category):

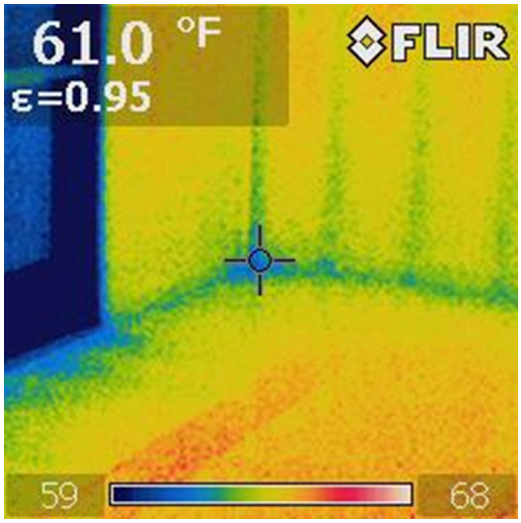
- No stormwater or water system issues were reported.
- Future upgrades could include permeable surfaces or rain gardens for managing runoff from the large roof surface.

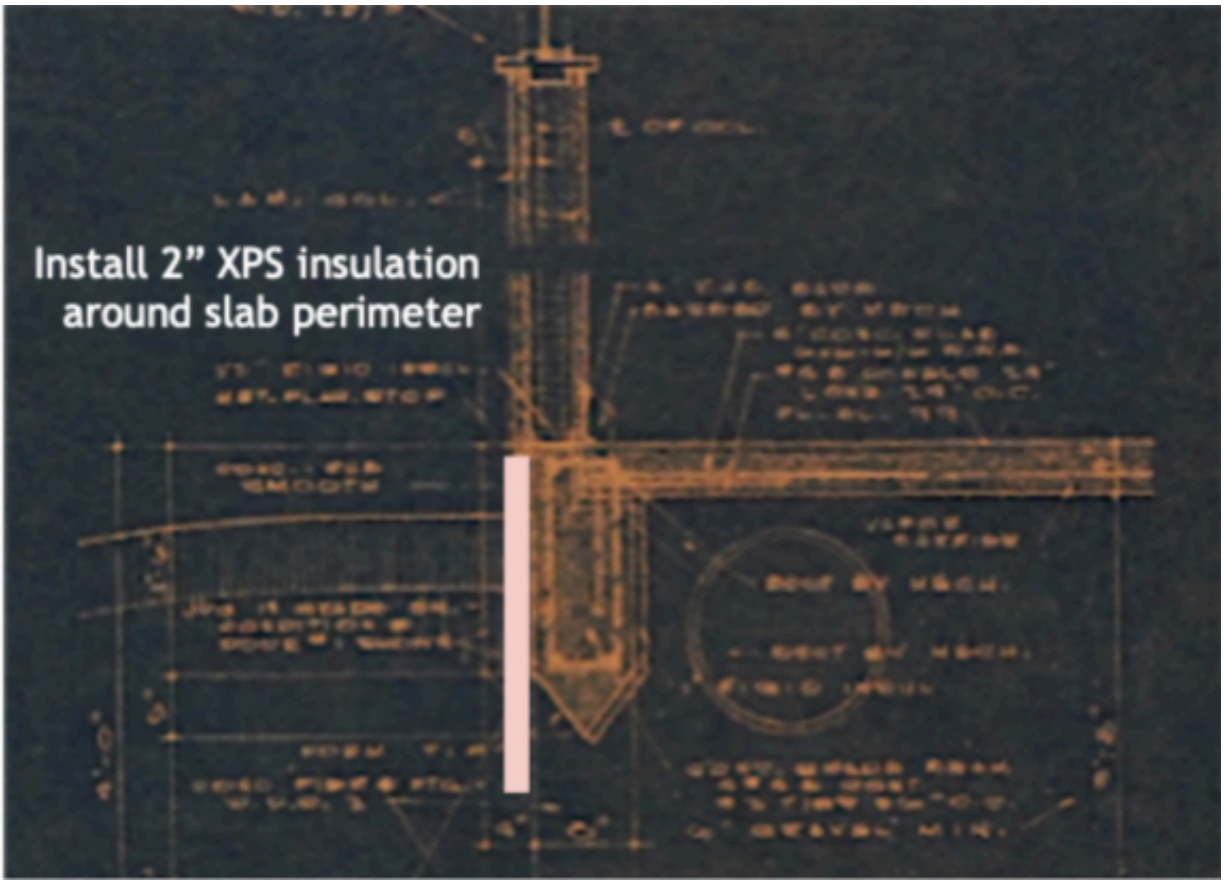
Engineering Documentation:

- Future engineering documentation from Energy Conservation Grant (WCI)

Exposed slab edge

(usually not a big deal, but ductwork is run under the slab on this building!)

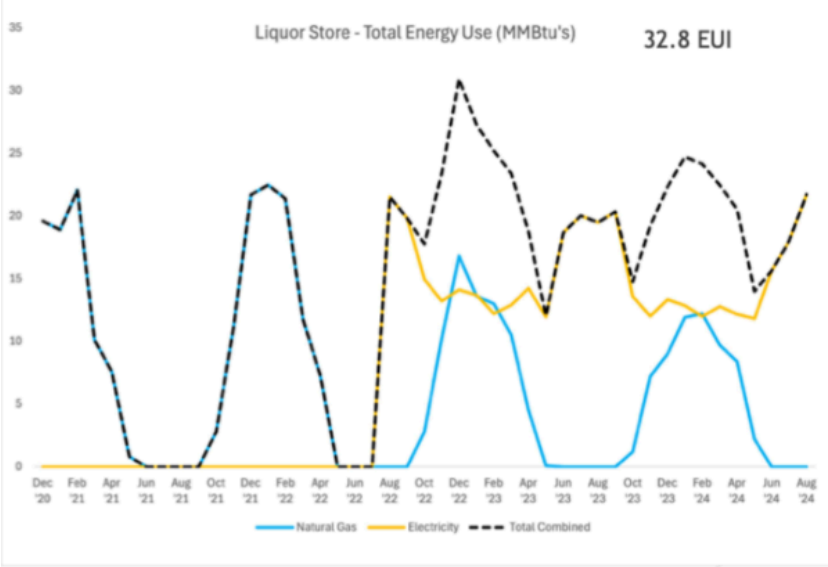




Liquor Store

Building Overview

The Vergas Municipal Liquor Store is housed in a historic two-story creamery building encompassing approximately 7,840 square feet. The liquor store and storage occupy the first floor, while the second floor is used for a second-hand clothing retail operation. The structure features a mix of interior rigid foam and exterior insulation; however, certain historic architectural features were intentionally left uninsulated to preserve community character.



The building is equipped with winter economizers that use outdoor air to cool the refrigerated cases—an uncommon but energy-efficient feature. The building's Energy Use Intensity (EUI) is 32.8 kBtu/ft²·yr, significantly lower than the nearby Frazee liquor store (EUI 80.97), even accounting for its higher refrigeration load.

Weatherization Efforts:

- Warm air loss through the **abandoned elevator penthouse** was confirmed, with unsealed access doors and insufficient insulation.
- Additional **miscellaneous air leaks** were identified at the rear entry and near the uninsulated electrical panel areas.

- **Recommendations:**
    - Airseal and insulate the elevator penthouse and roof penetration.
    - Airseal rear building leaks and other minor penetrations.
    - Install new weatherstripping on 2 exterior doors.

- **Estimated Cost:** $3,500 (labor and materials)

- **Projected Energy Savings:** 24% reduction in EUI (based on modeled air tightness improvement from 5 ACH@50Pa to 3 ACH@50Pa)

Mechanical Systems Upgrades / Critical Loads:

- Economizers on the coolers are already in use and likely reduce refrigeration loads during the winter.
- **Recommendation:** Ensure economizer controls and sensors are functioning correctly with regular seasonal tune-ups.

Renewable Energy Opportunities:

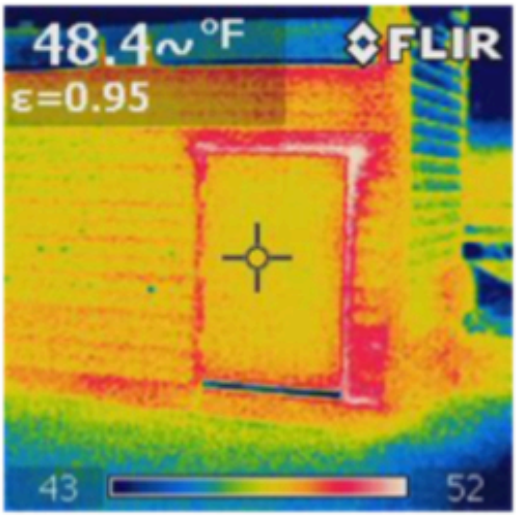
- No solar assessment conducted; architectural and roof design constraints may limit conventional rooftop PV deployment.
- **Recommendation:** Explore non-intrusive solar options such as parking canopy solar arrays or participation in community solar.

Water Environment (Future Category):

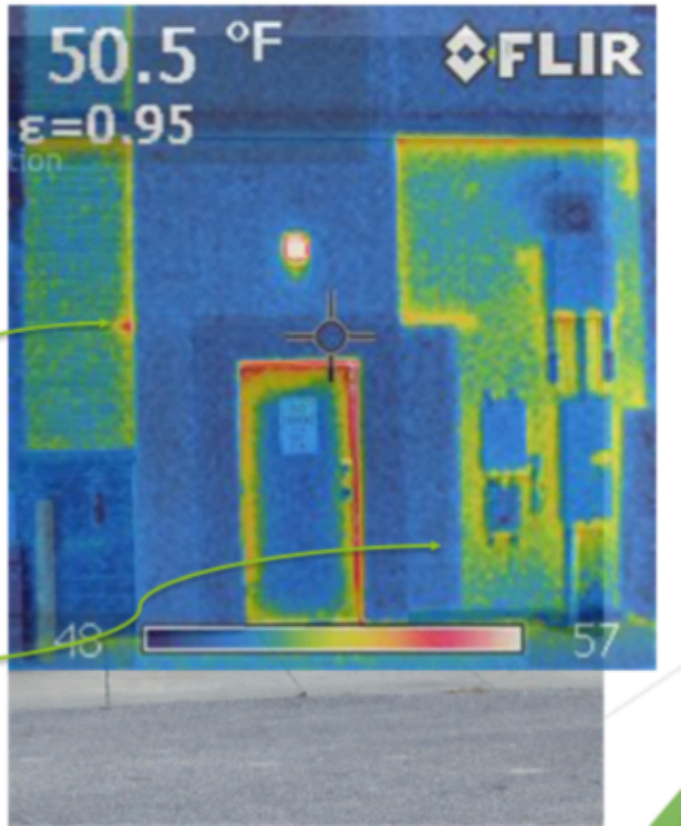
- No known water-related issues, though future opportunities could include improved drainage around the penthouse area and near back-of-house loading zones.

Engineering Documentation:

- Future engineering documentation from Energy Conservation Grant (WCI)



Old elevator shaft penthouse acts as chimney that sucks warm air out of the building. Seal it up.



Air leak

Old door opening (insulated better than section next to it)

APPENDIX B

Otter Tail Power Building Assessment: Energy Use & Operational Efficiency

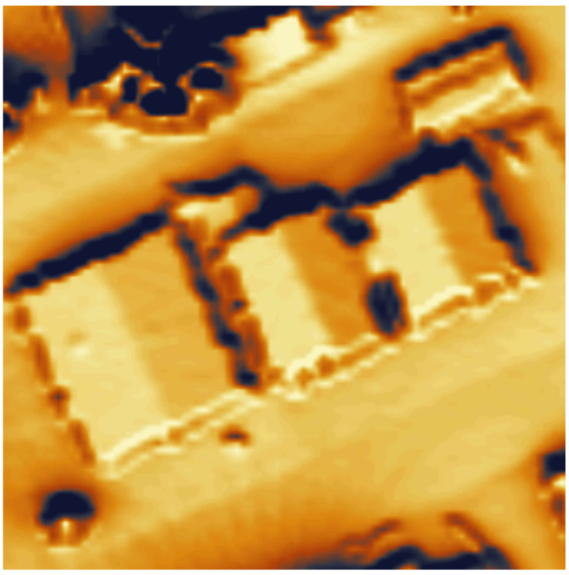
Fire Hall	**120 West Linden Street, Vergas MN 56587**
Array Size: 34 Kw DC	
Site Summary: This building is located just east of the Event Center and features a gable roof structure. To maximize solar gain and increase energy production during evening hours, the west-facing slope is recommended for array placement. Utilizing just one of the two available west-facing slopes, the roof can accommodate a 34 kW DC system, provided there are no obstructions such as vents or rooftop equipment.	

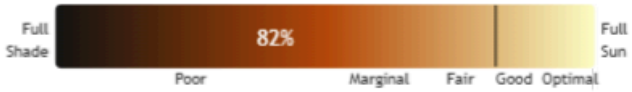
RESULTS

45,295 kWh/Year*

System output may range from 43,321 to 47,886 kWh per year near this location.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)
January	2.45	2,297
February	3.60	3,061
March	4.79	4,283
April	5.87	4,830
May	5.82	4,807
June	6.27	4,905
July	6.86	5,429
August	6.14	4,936
September	4.59	3,689
October	3.56	3,105
November	2.37	2,099
December	2.00	1,854
Annual	4.53	45,295



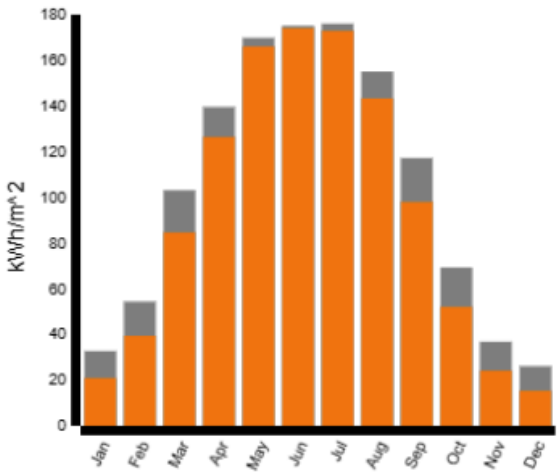


This site is **Good**. It would need a **5.06 kW** system to generate **50%** of average household use. This system would cost approximately **$18,967**. System payback is **13.8 years** after tax credit.

Utility Service Provider:
Otter Tail Power
215 South Cascade Street P.O. Box 496
Fergus Falls, MN 56538
(218) 739-8200
www.otpco.com

Site Details:
Total Annual Insolation: 1106.22 kWh/m^2
Avg Insolation per Day: 3.03 kWh/m^2
Source Data: Spring 2008-Spring 2010

Amount Actual Sun



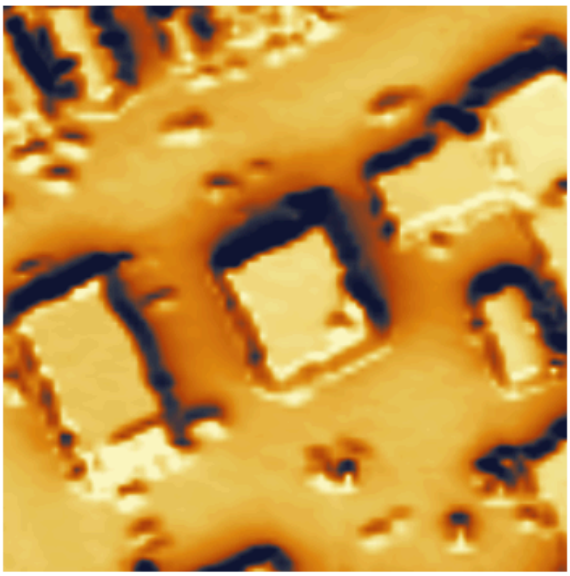
Vergas Off Sale Liquors	111 West Main Street, Vergas MN 56587
Array Size: 27 Kw DC	
Site Summary: This building is located west of the City Office and accommodates two tenants. It features a flat roof, and if the structural capacity allows, a ballasted solar mounting system is recommended to avoid penetrations to the roofing membrane.	

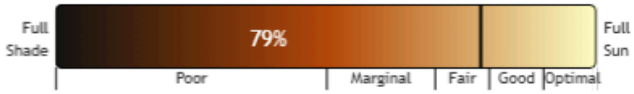
RESULTS

35,655 kWh/Year*

System output may range from 34,101 to 37,695 kWh per year near this location.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)
January	2.45	1,808
February	3.60	2,409
March	4.79	3,372
April	5.87	3,802
May	5.82	3,784
June	6.27	3,861
July	6.86	4,273
August	6.14	3,886
September	4.59	2,904
October	3.56	2,444
November	2.37	1,652
December	2.00	1,459
Annual	4.53	35,654



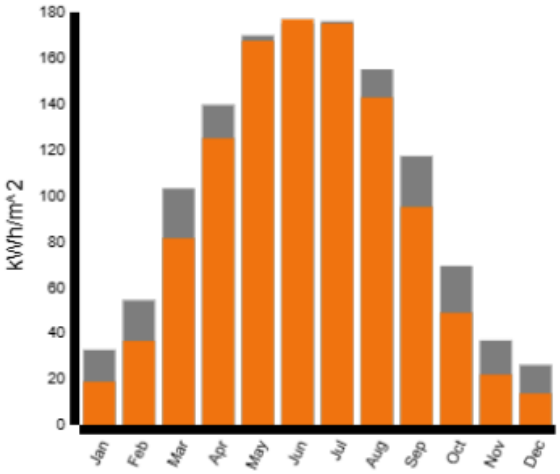


This site is **Fair**. It would need a **5.07 kW** system to generate **50%** of average household use. This system would cost approximately **$19,030**. System payback is **13.8 years** after tax credit.

Utility Service Provider:
Otter Tail Power
215 South Cascade Street P.O. Box 496
Fergus Falls, MN 56538
(218) 739-8200
www.otpco.com

Site Details:
Total Annual Insolation: 1102.34 kWh/m^2
Avg Insolation per Day: 3.02 kWh/m^2
Source Data: Spring 2008-Spring 2010

Amount Actual Sun



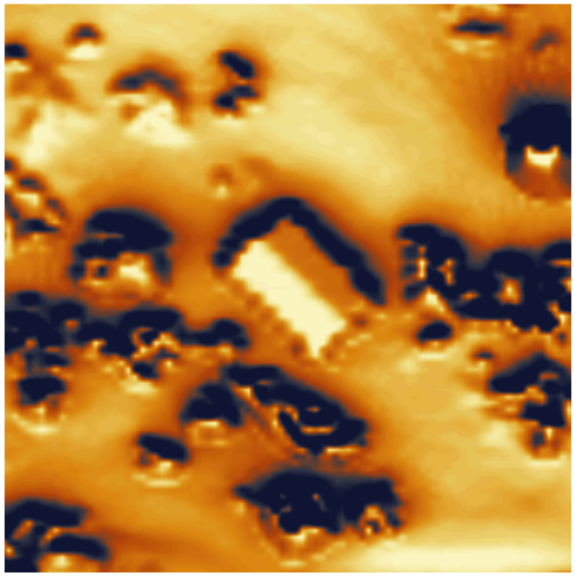
City Shop	311 Glenn St, Vergas MN 56587
Array Size: 20 Kw DC	
Site Summary: This building is situated just south on Pelican Avenue, adjacent to the water tower. The recommended location for the solar array is the west-facing slope of the gable roof. Several trees are in close proximity to both the building and the proposed array site; these should be trimmed or removed to minimize shading and reduce the risk of damage from falling branches or debris.	

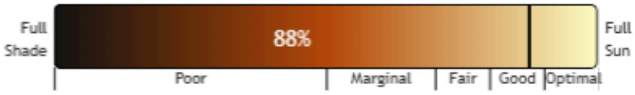
RESULTS

26,637 kWh/Year*

System output may range from 25,475 to 28,160 kWh per year near this location.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)
January	2.41	1,342
February	3.55	1,792
March	4.75	2,515
April	5.82	2,844
May	5.76	2,828
June	6.21	2,888
July	6.81	3,207
August	6.09	2,913
September	4.55	2,170
October	3.53	1,827
November	2.35	1,228
December	1.97	1,083
Annual	4.48	26,637



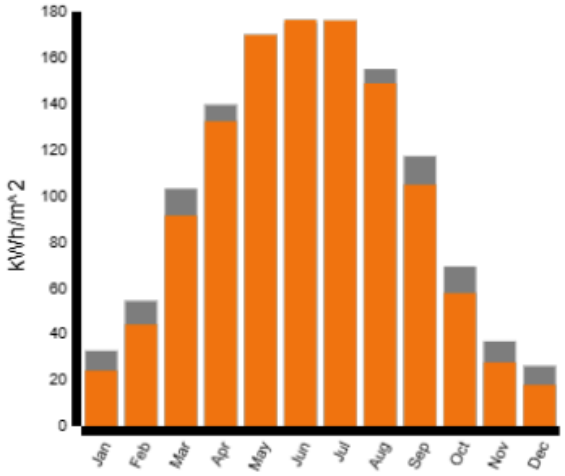


This site is **Good**. It would need a **4.79 kW** system to generate **50%** of average household use. This system would cost approximately **$17,959**. System payback is **13.1 years** after tax credit.

Utility Service Provider:
Otter Tail Power
215 South Cascade Street P.O. Box 496
Fergus Falls, MN 56538
(218) 739-8200
www.otpco.com

Site Details:
Total Annual Insolation: 1168.84 kWh/m^2
Avg Insolation per Day: 3.20 kWh/m^2
Source Data: Spring 2008-Spring 2010

Amount Actual Sun



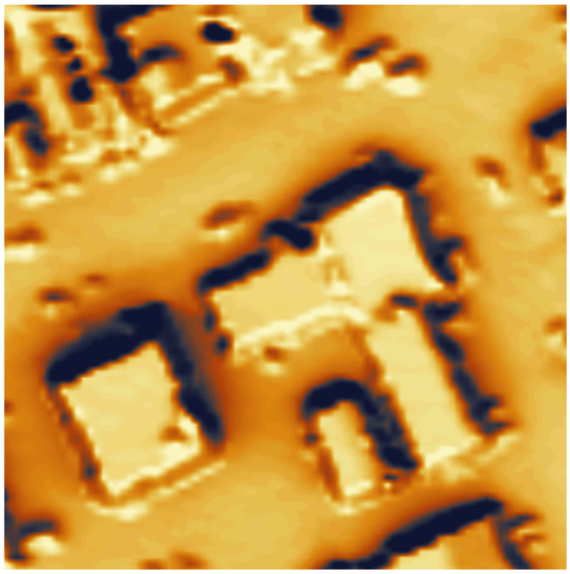
Government Services Center Vergas	123 E Main St, Vergas MN 56587
Array Size:16.5 Kw DC	
Site Summary: This building has the lowest solar potential among all the sites and features only a limited west-facing roof area. As a result, the solar array is positioned on the east-facing slope. The building is shared with the Post Office, presenting an opportunity for a collaborative solar installation with the tenants.	

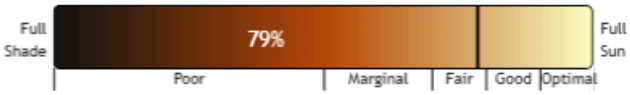
RESULTS

21,758 kWh/Year*

System output may range from 20,810 to 23,003 kWh per year near this location.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)
January	2.41	1,096
February	3.55	1,464
March	4.75	2,054
April	5.82	2,323
May	5.76	2,310
June	6.21	2,359
July	6.81	2,619
August	6.09	2,379
September	4.55	1,772
October	3.53	1,492
November	2.35	1,003
December	1.97	885
Annual	4.48	21,756



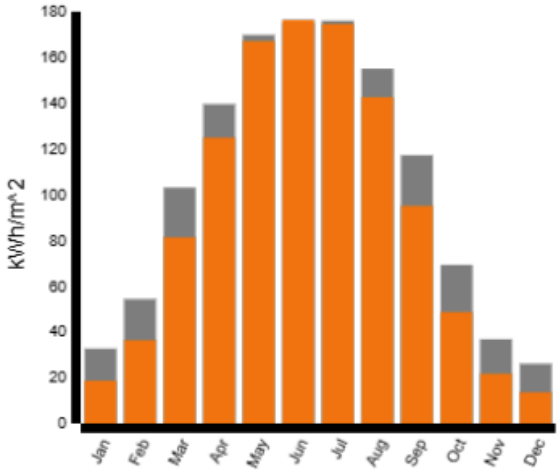


This site is **Fair**. It would need a **5.09 kW** system to generate **50%** of average household use. This system would cost approximately **$19,093**. System payback is **13.9 years** after tax credit.

Utility Service Provider:
Otter Tail Power
215 South Cascade Street P.O. Box 496
Fergus Falls, MN 56538
(218) 739-8200
www.otpco.com

Site Details:
Total Annual Insolation: 1100.30 kWh/m^2
Avg Insolation per Day: 3.01 kWh/m^2
Source Data: Spring 2008-Spring 2010

Amount Actual Sun



APPENDIX C

Summary of Existing City of Vergas Planning Documents

2019 Capital Improvement Plan (CIP)

The 2019 CIP prioritized:

- **Street and Utility Improvements**: West Lake Street, East Scharf Avenue, Bennett Road, and Townline Road.
- **Water and Sewer Extensions**: Focused on service expansion into unconnected city parcels.
- **Parks Improvements**: ADA-compliant upgrades at Long Lake Beach and restroom facility replacements.
- **Stormwater Drainage**: Minimal underground systems required; reliance on overland drainage remains effective.

2020 Housing Study

Key findings included:

- **Aging Housing Stock**: Median year built was 1956, but structures are generally well maintained.
- **High Ownership Rates**: 93% owner occupancy.
- **Senior Demographic Concentration**: 54% of the population is aged 55 or older.
- **Growth Potential**: 47 vacant lots ready for residential development; need for more accessible and affordable housing.

2036 Comprehensive Plan

Themes include:

- **Land Use**: Emphasizing compact growth, infill development, and shoreline preservation.
- **Housing**: Support for new energy-efficient housing options.
- **Public Facilities**: Prioritization of upgrades tied to climate resilience.
- **Transportation**: Strong support for regional trail connections and multimodal accessibility.
- **Energy and Sustainability**: Integration of renewable energy, energy conservation, and water management across projects.

The Comprehensive Plan serves as the high-level strategic framework under which CIP and housing initiatives can operate synergistically.

APPENDIX D

Community Survey Administration, Questions & Analysis

Survey Outreach: Vergas Community Resilience & Energy Survey

Help shape Vergas' future! Your feedback will inform local energy and climate initiatives.

Purpose: This survey aims to gather feedback from Vergas residents and visitors about concerns regarding extreme weather, infrastructure, environmental impacts and energy use. Your input will help the City of Vergas plan for environmental and energy initiatives over the next five years, ensuring we address community needs and improve resilience.

How It Will Be Used: Responses will inform city planning decisions, including infrastructure improvements, emergency preparedness, and potential energy initiatives. Data will be analyzed separately for city residents and non-city residents to understand differing needs.

You could win! If you'd like to be entered into a drawing to win one of four maple syrup jugs, please include your name and email address or phone number at the end of the survey.

Survey Administration:

The survey was made available via distribution of paper, hard copies at community events and in an online survey tool format. The online survey link and QR code was shared widely at community events and in City communications.

- Maple Syrup Festival – April 12, 2025 (QR codes & paper copies available)
- Throughout April 2025 at City Hall, online, and community locations (churches, coffee shops, local businesses, etc.)
- Sent out via water bills April 2025
- City newsletter in April 2025
- May Day Spring Youth Event - May 10, 2025

Survey Questions:

1. Residency Status *(Check one)*

⬜ Vergas Resident ⬜ Non-Resident

2. Age

⬜ Under 18 ⬜ 19 - 40 ⬜ 41- 60 ⬜ 61 and over

3. What types of extreme weather are you concerned about impacting Vergas in the next 5 years? *(Check all that apply)*

⬜ Lake water quality ⬜ Flooding ⬜ Wildfires ⬜ Extreme heat
⬜ Infrastructure/services (drinking water, heating, electricity, roads) ⬜ Not concerned

4. Do you have a backup plan for utility disruptions (electricity, water, heating)?

⬜ Yes ⬜ No ⬜ Not sure ⬜ I'd like to learn more about it

5. Has your home or business experienced uncomfortably high or low temperatures recently?

⬜ Yes ⬜ No ⬜ I'd like to learn more about it

6. How do you heat your home? *(Check all that apply)*

⬜ Natural Gas ⬜ Propane ⬜ Electricity ⬜ Wood/Pellet Stove ⬜ Geothermal
⬜ Solar ⬜ Other:
_____

7. Would you like to learn about reducing heating/cooling/electricity costs?

⬜ 1 (Not interested) ⬜ 2 ⬜ 3 (Neutral) ⬜ 4 ⬜ 5 (Very interested)

⬜ I'd like to learn more about it

8. Do you support the following in Vergas? *(Scale 1-5: 1 = Not supportive, 5 = Strongly supportive)*

Energy efficiency & environment protection initiatives:
⬜ 1 ⬜ 2 ⬜ 3 ⬜ 4 ⬜ 5 ⬜ I'd like to learn more about it

Solar energy installations:
⬜ 1 ⬜ 2 ⬜ 3 ⬜ 4 ⬜ 5 ⬜ I'd like to learn more about it

Streamlining permits for renewable energy & efficiency upgrades:
⬜ 1 ⬜ 2 ⬜ 3 ⬜ 4 ⬜ 5 ⬜ I'd like to learn more about it

Ordinances that protect the natural environment (e.g., water conservation, green space, pollution control (fertilizers)):
⬜ 1 ⬜ 2 ⬜ 3 ⬜ 4 ⬜ 5 ⬜ I'd like to learn more about it

9. If you are interested in getting involved with the Vergas Community Resilience & Energy initiatives, please include your name and email or phone number here:

_____

10. Additional Comments (Optional)

_____

_____

_____

11. Enter your name and email address or phone number to be entered into a drawing to win one of four maple syrup jugs:

_____

Survey Analysis

Overview

The survey collected 91 responses with strong resident participation (35 residents, 56 non-residents), providing a solid foundation for community-focused planning, but more efforts could be led to reach more residents of Vergas. The resident demographic skews older, with 82.4% over age 40 and 58.2% over 61, indicating an established, eventually engaged older community. A significant non-resident engagement suggests regional collaboration opportunities.

Question-by-Question Analysis

Q1-2: Residency Status & Age

The survey reveals a mature, engaged community with strong event participation but limited young adult representation. This demographic profile has significant implications for program design, communication strategies, and long-term sustainability planning. The older resident base brings stability and event engagement but requires accessible programming approaches and succession planning to ensure initiative continuity. To address the underrepresentation of younger generations, targeted youth engagement strategies should be implemented.

These may include creating a youth advisory committee, partnering with local schools and colleges, hosting youth-focused events or workshops, and leveraging social media platforms like Instagram or TikTok to reach younger audiences. Gamified participation opportunities and public recognition of youth voices can also foster a sense of belonging and investment in

community resilience efforts. Building pathways for youth involvement now will ensure continuity, innovation, and intergenerational collaboration in Vergas' long-term planning.

Key Planning Points:

- Design programs with accessibility for older adults (large print, convenient times, multiple formats)
- Develop youth engagement strategies to build long-term program sustainability
- Leverage high event engagement for volunteer leadership and program champions
- Partner with existing senior organizations and established community groups

Q3: What types of extreme weather are you concerned about impacting Vergas in the next 5 years? *(Check all that apply)*

The majority of respondents (75% residents and 82% non-residents) were concerned about the impacts of extreme weather events in the next five years. The most significant concerns included the impacts on water quality (57.1% residents and 50.9% non- residents) and infrastructure/services (drinking water, heating, electricity, roads) 45.7% residents and 47.3% non-residents). The majority responses from both residents and non-residents indicate a general awareness and appreciation for the potential impacts on the community's fragile natural resources, critical infrastructure and vital community services.

Key Planning Points:

- Identify the most likely hazards: extreme heat, flooding, drought, severe storms, winter extremes, wildfire smoke.
- Use local and regional climate projections, not just historical data.
- Map vulnerable areas: floodplains, low-lying neighborhoods, heat-island zones, aging infrastructure.
- Use nature-based solutions: green infrastructure, wetlands, urban tree canopy, permeable surfaces.
- Maintain and restore natural areas that buffer floods, heat, and erosion.
- Develop simple, consistent messaging for emergencies before they happen.
- Use multiple channels: text alerts, social media, local radio, community bulletin boards.
- Plan for heat emergencies (cooling centers, hydration access, outreach to seniors and outdoor workers).
- Ensure shelters and emergency services can operate during prolonged or overlapping events.
- Update emergency operations plans to reflect more frequent and intense events.

Q4: Do you have a backup plan for utility disruptions (electricity, water, heating)?

A critical disconnect exists between residents' second highest concern (infrastructure disruptions) and their actual preparedness level, with over half unsure or not having utility disruption backup plans. This gap indicates both vulnerability and risk to lack of emergency preparedness where education and resource development.offers an immediate opportunity for high-impact programming to remedy this and create an opportunity for more engagement.

Key Planning Points:

- Launch emergency preparedness education as highest priority initiative
- Develop community-wide backup power and heating strategies
- Create neighborhood-level mutual aid networks for emergencies
- Partner with utilities on system resilience and outage communication
- Establish community emergency shelters with backup systems (event center and Firehall)

Q5: Has your home or business experienced uncomfortably high or low temperatures recently?

Only 9.7% of Vergas residents reported experiencing uncomfortably high or low home temperatures recently, while an additional 12.9% expressed interest in learning more about the issue. Among non-residents, 7.4% reported discomfort, with 3.7% open to learning more. Although current discomfort levels appear low, the interest in learning more, particularly among residents, highlights an opportunity for proactive outreach and education. This suggests that while thermal discomfort may not yet be widespread, preparedness, energy efficiency, and climate adaptation efforts remain relevant and should target awareness, prevention, and future-proofing homes against more extreme conditions.

Key Planning Points:

- Offer voluntary energy assessments and educational resources on home temperature control
- Develop early outreach and support tools before discomfort becomes more common
- Target interested residents with workshops on weatherization, HVAC options, and insulation
- Collaborate with local contractors and utilities to prepare for scalable efficiency programs
- Track seasonal changes and follow up to monitor if concerns grow during extreme weather events

Q6: How do you heat your home? *(Check all that apply)*

Almost 69% of Vergas residents indicated that natural gas is their primary source of heat with 40% indicating that they also use electrical heating sources. The largest percentage of non-residents (47.3) selected electric as their primary source of heat with 45.5% indicating they also use propane.

Key Planning Points:

- Map where natural gas–heated vs. electric-heated homes are concentrated.
- Identify housing types most at risk (older homes, rentals, manufactured housing).
- Identify buildings that can serve as warm-up centers with backup power.
- Coordinate with utilities on restoration priority during cold snaps.
- Encourage weatherization and efficiency upgrades to reduce heating demand.
- Support insulation, air sealing, and window improvements — especially in electric-heated homes.
- Consider incentives for backup heating or resilience upgrades where appropriate.

Q7: Would you like to learn about reducing heating/cooling/electricity costs?

Among Vergas residents, 47% (16 of 34) reported low or no interest in learning about reducing heating, cooling, or electricity costs, with 15 not interested and 1 slightly not interested. However, 35% (12 residents) indicated neutral to strong interest, including 6 neutral, 7 slightly interested, and 5 very interested. While overall enthusiasm is moderate, this engaged segment presents a clear opportunity to build momentum. By focusing on residents who are already curious or open to learning, the city can lay the groundwork for broader adoption of energy efficiency practices over time.

Key Planning Points:

- Target outreach to the 35% of residents showing potential interest with personalized, easy-to-understand materials
  Use peer examples and community champions to demonstrate real-life savings and comfort improvements
- Offer small-scale pilot programs (e.g., home energy checkups or rebates) to activate the “curious middle”
- Pair cost-saving messaging with broader resilience goals to increase relevance
- Monitor shifts in interest over time, especially during seasonal utility cost spikes

Q8: Do you support the following in Vergas? *(Scale 1-5: 1 = Not supportive, 5 = Strongly supportive)*

The majority of survey participants reported being in favor of ordinances that protect the natural environment (e.g., water conservation, green space, pollution control), streamlining permits for renewable energy & efficiency upgrades, and energy efficiency & environment protection initiatives.

Key Planning Points:

- Tie ordinances to local priorities: water quality, flooding, tree loss, energy costs, reliability, or public health.
- Be explicit about what issues the City is trying to solve (e.g., runoff into a local lake, high winter heating bills).
- Avoid abstract language if it risks resistance; focus on stewardship, resilience, and cost savings.
- Align environmental protections with existing comprehensive plans and state requirements.
- Provide plain-language guidance for developers, contractors, and homeowners.
- Offer templates, checklists, or example projects.

APPENDIX E

MnSEIA

Minnesota Solar Energy Industries Association

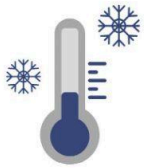
We Move Minnesota Solar + Storage Forward

Does Solar Energy Work in Minnesota?

When you think of solar energy, you may first think of sunny places like California. But did you know that Minnesota ranks 16th in the nation for installed solar capacity? Despite our infamous winters, the Land of 10,000 Lakes is a great place for solar and produces plenty of it.

Q: Does Solar Work in Cold Weather and Climates?

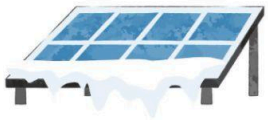
A: Yes! Minnesota's cold and snowy weather does not prevent solar panels from using the sun's rays to produce energy. In fact, colder temperatures actually help improve the solar system's efficiency. Hot temperatures can overheat the systems, lowering their efficiency and capturing less energy. Solar exists in cold climates around the world - from Canada and Alaska to Norway and Germany!



Q: Will Snowfall Prevent Solar Production?

A: No! In general, snowfall will not stop solar energy production. When a light snowfall occurs, sun rays can penetrate through the snow onto the panels. During cold clear days, the extra layer of snow on the panels actually acts as a mirror. It reflects sunlight onto the panels and leads to increased energy production.

The tilted angle of most panels allows snow to easily slide off and requires little maintenance. When a heavy snowfall occurs, gently brushing off the panels is helpful to keep producing energy.



Q: What Happens to Solar Production on Short Winter Days?

A: During winter, Minnesota experiences reduced hours of sunlight a day. Although this does decrease the amount of time a solar panel is working at full efficiency, the amount of sunlight available in Minnesota is more than enough to make it worth the while. Adding energy storage will make the solar array even more efficient. Batteries store excess energy from when it's sunny to deploy later at night or when it's cloudy.

Q: Why is This Important?

A: Solar is an important industry in Minnesota and misconceptions hurt local businesses and workers. There's plenty of sunshine in Minnesota to provide clean energy across the state; creating family-sustaining jobs, making our grid more resilient to winter storms, and more.

5,000 jobs
Solar Installer is the fastest growing job in the U.S

1.7 GWs
Of solar - Enough to power over 230k homes!

$2.5 BN
Solar investment in the state

#16 in the U.S
For installed solar capacity

www.MnSEIA.org

APPENDIX F

Using This Plan to Write Grants

This Energy & Resilience Plan can help Vergas' government, citizens, and businesses secure funding for projects. Use data and insights from plans (CIP, Housing study, and Comprehensive Plan) and stories (e.g., [Event]) to craft compelling applications for (Local/State/Federal) grants.

Using an existing city plan is one of the most effective ways to research, justify, and build strong grant applications. Funders want to see that projects are not one-off ideas—they're grounded in community priorities, data, and long-term strategy.

Use the Vergas Energy & Resilience Plan to serve as the primary evidence base to:

- Demonstrate community need and alignment
- Show stakeholder engagement and legitimacy
- Identify ready-to-implement projects
- Provide data, maps, and policy language for proposals
- Connect funding requests to measurable outcomes

The goal is to translate plan priorities into fundable projects with clear scope, partners, budgets, and impact.

Key Grant Development Steps:

1) Identify relevant priority areas

2) Match plan priorities to funding opportunities

3) Extract supporting evidence from the plan

4) Define a grant-ready project

5) Identify partners named in the plan

6) Translate goals into measurable outcomes

7) Use plan alignment as the core narrative

8) Build a reusable grant framework