Energy Independent Communities:
25x25 Plan Grants
Pilot Presentations
4th Quarter Report

Stephen Crane, City Administrator
On behalf of
The City of Platteville and the City of Lancaster
Green Bay, WI
December 17th, 2009





Overview

What was measured? Why?

Discoveries/Surprises

Total Projects Considered

Pathways to 25 x 25

Projects Selected – Explanation

Potential Renewable Feedstocks

Existing Unknowns: Necessary Information for Future

Action Steps – Immediate & Long - Term

Energy Independence Team Members





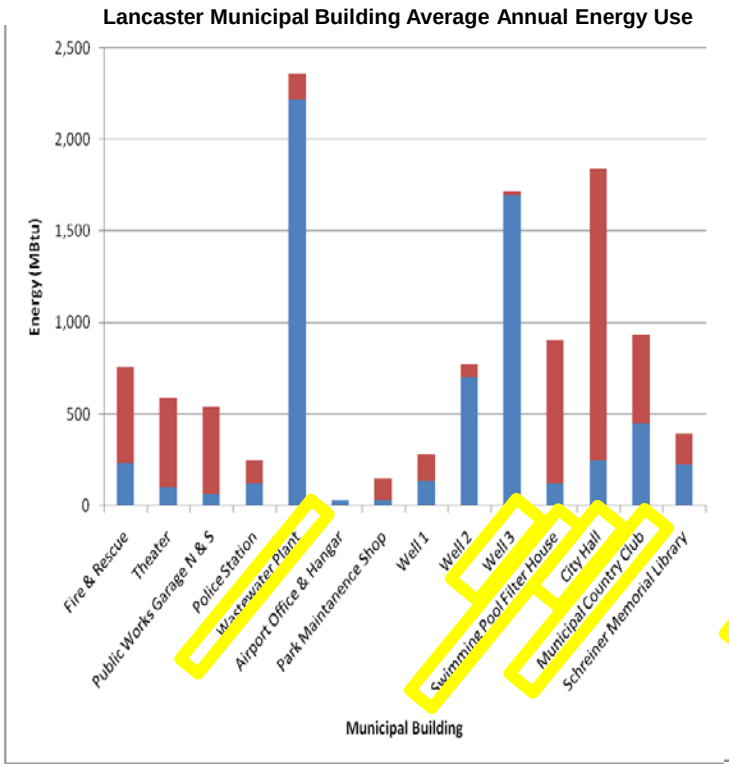
Platteville/Lancaster Energy Independence Team

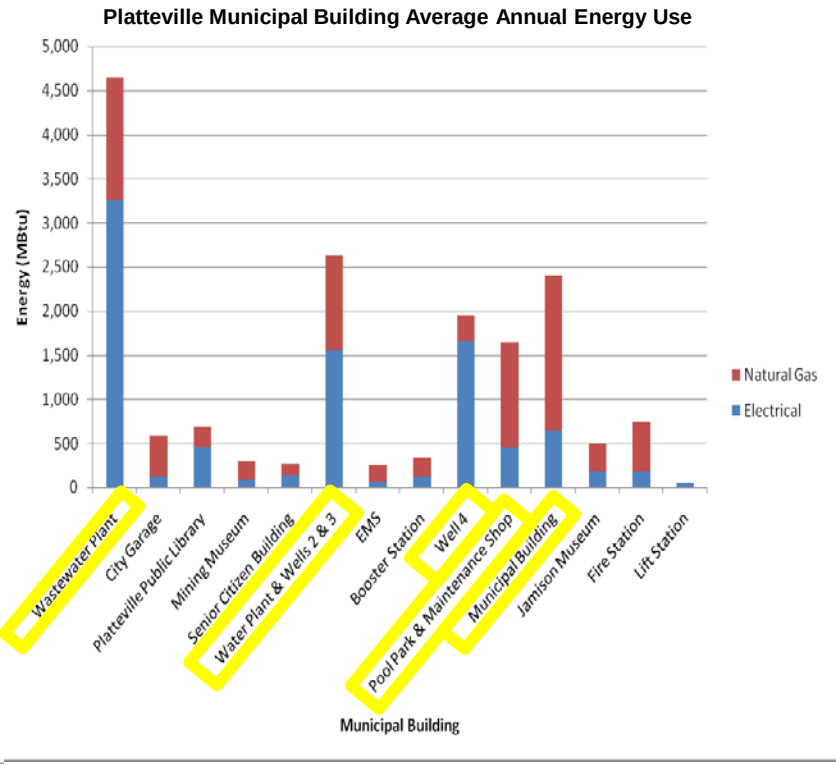
What was measured? Why?

- The first step to achieving the 25 by 25 goal and becoming an Energy Independent Community is to understand current energy use.
- Professors and students from the UW-Platteville studied the past three years of energy use for municipal buildings, vehicle fleets, and other infrastructure to measure energy consumption.
- They also analyzed the theoretical heating, cooling, ventilation, and lighting loads.
- An example of the user-friendly data reporting featured in the report is shown below.









Lancaster
Net Municipal Building Energy
11,527 MBtu

Platteville
Net Municipal Building Energy
16,977 MBtu

2,882 MBtu

25% Goal

4,244 MBtu




Platteville/Lancaster Energy Independence Team

Discoveries/Surprises

Surprises encountered during the course of the study include:

- The municipal facilities that consumed the most energy.
  - Larger, older buildings like the City Halls were expected
  - Wastewater treatment plants and wells were also high consumers of energy.
    - The wells that had been upgraded with variable frequency drive (VFD) motors were much lower than wells without the VFDs, clearly showing the benefits of that equipment.
    - The blowers used at the wastewater treatment plant in Platteville also used a surprising amount of electricity.
  - The swimming pools were larger-than-expected consumers of energy.
- The many common sense behavioral changes that reduce energy consumption.
- The viability of a geothermal heating system at the Lancaster Golf Course. The conversion of the HVAC system to geothermal does not appear to be cost-prohibitive.




Platteville/Lancaster Energy Independence Team

Total Projects Considered (a list)

Both the City of Lancaster and the City of Platteville are acutely interested in implementing the recommendations of the team from UW-Platteville. Both municipalities are in the process of evaluating a variety of projects to achieve the 25 by 25 goal. The list below includes many of the projects that have been discussed by Lancaster and Platteville:

- Electric vehicle purchase
- Daylighting
- High efficiency boilers
- More efficient lighting
- Motion sensors
- Building insulation
- VFD for water and wastewater
- Behavioral changes
- Turn off lights
- Study existing HVAC systems for deficiencies and upgrade opportunities
- Building orientation for Platteville PD
- Lighter interior paint colors
- Interior lighting configuration
- Safe routes to schools




Platteville/Lancaster Energy Independence Team

Pathways to 25 x 25

For Lancaster:

•Implement two projects yearly that will increase both energy efficiency and the use of renewable energy sources.

- •2010 efficiency project: Replacement of the boilers in City Hall and install daylighting equipment in the Public Works garage .
- •2010 renewable project: Purchase of an electric utility vehicle to replace an inefficient pickup truck in the City fleet.
- •2011 efficiency project: Installation of motion sensors to control lights in City Hall, upgrading light fixtures in all City buildings, and implementing behavioral changes to promote energy efficiency.
- •2011 renewable project: Work with Alliant Energy on a cost-effective plan for purchasing “green” electricity.
- •2012 efficiency project: Converting golf course facility to a geothermal system.
- •2012 renewable project: Purchase an additional electric utility vehicle to replace another pickup truck in the Public Works fleet.

•Future efforts will also include the use of Variable Frequency Drive (VFD) motors and other energy-saving improvements at the Wastewater Treatment Plant.

•Reinvest cost savings achieved into future renewable energy efforts, creating a revolving appropriation dedicated to achieving the 25X25 goal.




Platteville/Lancaster Energy Independence Team

Pathways to 25 x 25

For Platteville:

•Use of LED lights on new traffic signals since 2005

•Work with UW-P professors to collaborate on design of a digester for animal waste to produce methane for co-generation of electricity.

•Installed Variable Frequency Drive (VFD) and new blowers in the WWTP to reduce energy usage, estimated at 40%.

•Work with UW-P Senior Design team in mechanical engineering to develop tank heater to heat Caustic Soda tank and wrap of insulation thus allowing energy efficiencies, a 1 year pay back. Will be implemented in 2010.

•Municipal Building exterior repairs including:

- •Replacing roofs and adding R-37 insulation (Currently the roofs have no insulation).
- •Convert fluorescent fixtures to energy efficient blasts and bulbs and install compact fluorescent bulbs in incandescent lights.

•Conduct a feasibility study of the HVAC system in City Hall in 2010 that is within the focus on energy guidelines with targeted implementation in 2011. Study will be model for all other municipal buildings in the next five year Capital Improvements Plan (CIP).

•Evaluate fleet efficiencies in 2010.

•Install heat recovery system in the new Police Department building that will add to the 30% gain in overall efficiency of the building.




Platteville/Lancaster Energy Independence Team

Projects Selected – Explanation

For Lancaster

•Replace the existing Constant Volume Roof Top Units (RTUs), a10 ton and a15 ton replaced with AAON Variable Volume RTUs with Gas heating and DX cooling section. The AAON VAV RTUs will:

- •Eliminate by-pass damper in the Duct System that lowers the efficiency of the entire system.
- •Add Variable Frequency Drives (VFD) to the blowers to increase operating efficiency.
- •Increase cooling operating efficiency by a minimum of 3 EER points

•Install 16 light pipes on the roof of the Public Works garage South building and new T-8 fluorescent fixtures with attached light sensors that will turn lights on or off depending on the amount of daylight yield by the pipes.

•Replace inefficient high-pressure sodium fixtures that remain on when the building is not in use with new T-8 fluorescent fixtures and motion sensors in the Public Works garage North building.

•Purchase of the electric vehicle to reduce the consumption of nonrenewable energy through the phasing out of the pickup truck that it replaces.




Platteville/Lancaster Energy Independence Team

Potential Renewable Feedstocks

As the efforts to achieve the 25x25 goal continues, the Cities of Lancaster and Platteville will explore the many potential renewable feedstocks for the generation of energy. With a significant amount of agricultural industries in the region, biomass should be plentiful and a reliable source of renewable energy in the future, so long as local power plants are allowed to convert.

Similarly, as the availability and reliability of biodiesel improves, both Cities will seek ways to incorporate it into vehicle fleets. Additionally, as the economic viability, or as grants become available, the use of solar panels and wind turbines to generate electricity will be explored.

Finally, both the Cities of Lancaster and Platteville support the efforts of Alliant Energy to establish biomass plant in Cassville. Most, if not all, of the electricity both cities use is generated at the existing Cassville coal-fired plant. The Public Service Commission of Wisconsin should allow the biomass plant to be constructed so renewable energy can be used throughout the region.




Platteville/Lancaster
Energy Independence Team

Existing Unknowns: Necessary Information for Future

"It's the economy, stupid!"

James Carville




Platteville/Lancaster Energy Independence Team

Action Steps – Immediate & Long – Term

The Lancaster action steps to proceed on the Pathway to 25X25 include:

- Immediate
  - Receive EECBG award from the Office of Energy Independence
  - Implement grant-funded improvements
  - Purchase electric vehicle
- Long-term
  - Track energy use in 2010 and compare with 2009
  - Quantify savings based on use, price, weather conditions, etc.
  - Allocate money saved for energy efficiency improvements in 2011 budget

The Platteville action steps to proceed on the Pathway to 25X25 include;

- Immediate
  - Implement 2010 initiatives (caustic tank wrap, HVAC/Fleet studies)
  - Evaluate payback scenarios
  - Pursue funding for further improvements
- Long-term
  - Develop energy guidelines and municipal building model for future CIP





Platteville/Lancaster Energy Independence Team

Energy Independence Team Members:

City of Platteville
- City Manager Dave Berner
- Howard Crowfoot, DPW Director
- Joe Carroll, City Planner

UW-Platteville
- Kurt C. Rolle, Ph.D., P.E.
- Jeff Hoerning, Ph.D.
- Lynn Schlager, Ph.D., P.E.
- Justin Reeder, U.W.P. Intern

City of Lancaster
- Mayor Jerry Wehrle
- City Administrator Stephen Crane
- Jerry Carroll, DPW Director
- ICMA Fellow

- The team members were selected to bring direct knowledge about the municipal buildings as well as the most current technical information about alternative energy.
- Members of the project team have been meeting on an individual basis for several months to prepare the final report. The full project team has also met regularly.




Platteville/Lancaster Energy Independence Team

Additional Comments, Observations, Recommendations

Don’t forget to recycle!

For more information contact:

Stephen Crane
City Administrator
City of Lancaster
206 S. Madison Street
Lancaster WI 53813