

Town of Jackson 40 x 20 Initiative: Action Plan

40 x 20 Venture Team

2013



A Detailed Plan to Enable the Town of Jackson to Meet the Goals Set
Forth in the 40 x 20 Policy Statement

Town of Jackson
150 East Pearl Avenue, Jackson WY



Policy Statement

40 x 20 Energy Efficiency Goal

With comparable or improved levels of service,

1. We will be 40% more energy efficient with all Town facilities by June 30, 2020 from FY2006 as measured on a square foot basis.
2. All Non-START Town vehicles and equipment will be 40% more fuel efficient by June 30, 2020 from FY2006.
3. We will be 20% more efficient with Town of Jackson water consumption by Town facilities by June 30, 2020 from FY2010.
4. We will divert 50% of our waste stream by June 30, 2020.
5. We will be 20% more energy efficient in producing water for our service area by June 30, 2020 from FY2010.¹
6. We will be 40% more energy efficient per gallon of wastewater treated and discharged through our Wastewater Treatment Plant by June 30, 2020 from FY2006.²
7. We will maintain 100% of the electrical energy used for Town operations from renewable energy sources.³

¹ An action plan for this item will be developed by the Public Works team.

² An action plan for this item will be developed by the Public Works team.

³ The renewable energy sources include those referenced in the Comprehensive Plan.

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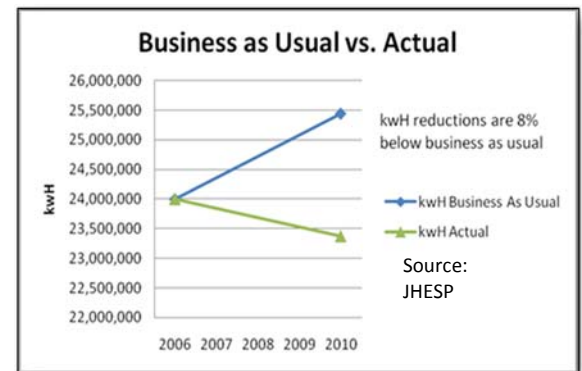
INTRODUCTION: 40 x 20 INITIATIVE

INTRODUCTION

For the past decade, the Town of Jackson (TOJ) has implemented innovative sustainability initiatives, such as installing 257.34 KW of solar photovoltaics (1,114 panels), signing on to the Mayors Agreement on Climate Change, and helping to form the community-based energy efficiency and renewable energy education and action-focused non-profit, Jackson Hole Energy Sustainability Project. These initiatives were mainly an outcome of the Jackson/Teton County 10 x 10 Initiative. TOJ is committed to being a sustainability leader for the community and region, and that starts with TOJ's continual efforts to mitigate its own environmental impacts. Therefore, TOJ is now embarking upon its next step toward a more sustainable community: the *Town of Jackson 40 x 20 Initiative*. This Initiative will build on the work accomplished in the *10 x 10 Initiative* and set the framework for moving forward.

HISTORY

The 10x10 Initiative commenced in 2006 when TOJ officials projected that energy use, under a business-as-usual scenario, would increase 8% by 2010. TOJ had already begun energy conservation and efficiency projects and had also signed on to the Mayor's Agreement for Climate Change that year, which committed the Town to reducing its carbon footprint. To address the projected energy increase, TOJ took a number of actions.



First, TOJ partnered with Teton County by creating an official memorandum of understanding outlining the partnership's goals, objectives, responsibilities and timelines for implementing energy conservation initiatives. Next, the Energy Efficiency Advisory Board (EEAB) was formed. The EEAB consisted of TOJ & Teton County leadership, technical staff, and relevant community organization leaders. The Board was tasked with improving energy efficiency throughout government operations. "In order to provide focus for the newly formed Board, the Town and County adopted an aggressive energy reduction target for local government operations, committing to *10% reduction in electricity and fossil fuel use by the year 2010 (10 x 10)*." ¹ The EEAB developed a data collection methodology, then collected historical data, then analyzed the data to officially establish the 2006 baseline year for all sources of energy consumption. Subsequently, EEAB sub-groups created action plans that included several strategies and objectives for achieving the 10 x 10 goals.

In total, Town and County governments reduced their 2010 energy consumption 3% below 2006 levels, with a 4% reduction in fossil fuels and a 1% reduction in electricity. The main challenge that encumbered the 10 x 10 goal was the consequences of a new DEQ Wastewater quality

In 2006, facilities accounted for over 45% of all Town and County energy usage.

JHESP

¹ Jackson Hole Energy Efficiency Plan 2007

standard requiring increased run-time of the surface aerators and blower systems at the Wastewater Treatment Plant. Since the wastewater treatment facility accounts for 27% of the total Town facilities' electricity use, the increased run-time caused a 5% increase in electrical demand. Additionally, several new buildings and operations (2007- Deloney RR/Bus Shelter & 2008 - Parking Garage) were added to the Town's facilities after the 2006 baseline year. TOJ would have needed to reduce its electricity consumption by 18% to end up 10% below the 2006 baseline year.

The 10 x 10 Initiative did have some impressive results in other areas. Significant reductions were achieved in fossil-fuel energy consumption over the four-year period. For example, in 2010 the Town vehicle fleet consumed 20% less gasoline and diesel than in 2006 while maintaining (and in some cases increasing) levels of service to the community. Individual behavioral changes and changes within individual departments drove major reductions in electricity and fuel. Equipment upgrades and building retrofits partially offset the increases in energy use incurred with the addition of new buildings and operations. As a result, in 2010 Town and County government operations consumed fewer resources and spent less public money on energy than in 2006.

Another great result of the 10 x 10 Initiative was the formation of the Jackson Hole Energy Sustainability Project (JHESP). JHESP's mission is "to make Jackson Hole a leader in energy efficiency and energy innovation; to transform the community into a model for sustainability, cost savings, and conservation; to provide outreach and education; and to provide creative investment opportunities to realize the goals of energy independence for future generations." JHESP, a non-profit funded through the recently passed SPET Tax, private & public donations, grants and other means, continues to assist the Town energy efficiency and renewable energy projects.

PURPOSE

This Action Plan is the first step in establishing the Town of Jackson 40 x 20 Initiative and will serve as the catalyst to create: 1) A Plan for implementation of projects and programs and, 2) A communication and employee engagement process. The process of generating the Action Plan has been an exercise in building internal support, engagement and accountability among mid-level staff. The process generated new and heightened interest in sustainability action among the team members and, as the process continues, the Team will continue to engage in the 40 x 20 Initiative. In developing the Action Plan, the Team was able to identify several opportunities for improvements that are included in the Action Plan. Overall, this Action Plan will identify high-level next steps and resources needed to support the process.

40 x 20 ACTION PLAN

To follow are the seven reports generated by the *40 x 20 Venture Team*. The reports include the following information: Introduction, Baseline, Strategies and Short and Long-term goals. The Introduction identifies the "need" for addressing the particular sub-group, and may include evidence of community support for each sub-group Plan. It also includes background

information, where applicable, that summarizes significant actions taken as part of the *10 x 10 Initiative* and any actions taken to-date since the completion of *10 x 10*. The Baseline describes the fiscal year data for which the 40 x 20 goals will be measured against. Strategies are broad statements that set direction for developing specific actions. Short and long-term goals are more specific objectives and action items. *Please note that all recommendations are contingent upon further cost-benefit and impact analysis.* The Sub-Team Areas and Participants are as follows:

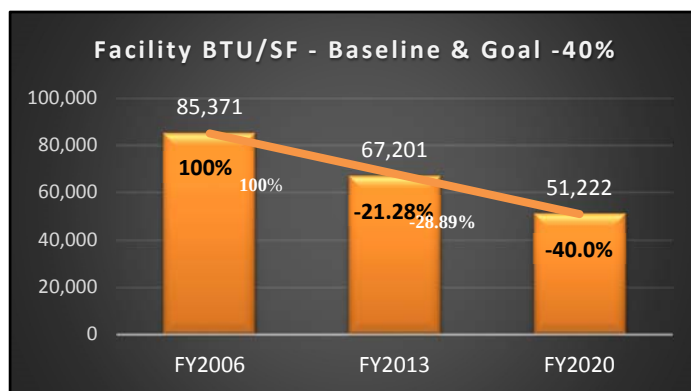
Sub-Team Name:	Sub-Team Participants:
Building & Facilities Energy	Shawn Hill, Pauline Scholes, Jason Wright
Water Consumption	Olivia Goodale, Johnny Ziem, Jeromie Traphagan
Fuels	Jeremy Minor, Trevor Aitken, Josh Wilson
Waste	Jason Wright, Andy Pearson, Johnny Ziem
Water Production- Energy Efficiency	Public Works Staff
Wastewater Treatment- Energy Efficiency	Public Works Staff
Communications, Education & Outreach	Jeromie Traphagan, Johnny Ziem, Jason Wright

40 x 20 INITIATIVE: GOAL 1

WE WILL BE 40% MORE ENERGY EFFICIENT WITH ALL TOWN FACILITIES BY JUNE 30, 2020 FROM FY2006 AS MEASURED ON A SQUARE FOOT BASIS

INTRODUCTION

“It is the community’s goal to achieve carbon neutral buildings by 2030. Increasing the energy efficiency of buildings and reducing the energy used for the construction of buildings will greatly increase the community’s energy conservation efforts...”¹ Practices to reduce energy consumption should continue throughout the use of a building, regardless of the energy efficiency of a building’s design. In order to take steps toward achieving 40% more efficient facilities by 2020, we will focus on further retrofits and upgrades to existing Town structures. We will do this by identifying, analyzing the feasibility of, and, where appropriate, implementing projects and programs that reduce overall BTU/SF usage, as well as ensure that any facilities built in the future are as energy efficient as technology and funding will allow.



As part of the 10 x 10 Initiative, energy audits were performed on all Town/County facilities and systems, which helped identify areas for energy efficiency upgrades and opportunities for energy conservation measures. “The first level of energy improvements (low cost / quick return) consisted of: caulking, weather stripping, insulation, programmable thermostats, light bulbs & lighting systems. The second level of energy improvements (medium cost / a little longer on return) consisted of: windows & doors, heating & cooling systems. The third level of energy improvements (more expensive / longer return) included: geothermal & ground source heat pumps, solar electric photovoltaic systems and solar hot water systems.”²

In 2006 the Town, in conjunction with Lower Valley Energy, performed lighting audits in Town Hall and Public Works facilities which created a project to retrofit old lighting systems with new, energy efficient lighting systems. In 2007 the Town hired EMC Engineers to perform energy audits and mechanical and electrical needs assessments in Town Hall, Public Works, and Wastewater Treatment Plant. EMC produced a report which identified a list of recommended energy efficiency upgrades and a list of current mechanical and electrical repairs. Please see the appendix for a complete list of energy efficiency improvements for each facility the Town has chosen to make investments in.

¹ Jackson/Teton County Comprehensive Plan, Principle 2.4 - Increase energy efficiency in buildings

² TOJ Town Council Staff Report, 3-4-13

Additionally, four new solar photovoltaic projects were recently installed for a total of 38,820 kilowatt hours (KwH's) per year. Town Hall FY2013 used a total of 265,120 KwH's which means



our 13.26 KW PV system should produce about 1200 KwH's annually per KW installed or about 15,912 KwH's annually, **15,912/265,120 = 6% of the total annual use.** Deloney Restrooms FY2013 used a total of 32,480 KwH's which means our existing five KW's and the new additional five KW's systems should produce about 1200 KwH's annually per KW installed or about 12,000 KwH's annually, **12,000/32,480 = 36.95% of the total annual use.** Home Ranch Restrooms FY2013 used a total of 59,240 KwH's which means our 4.59 KW system should produce about 1200 KwH annually per KW installed or about 5,508 KwH's annually, **5,508/59,240 = 9.3% of the total annual use.** Public Works Shops FY2013 used a total of 189,760 KwH's which means our 9.5 KW PV system should produce about 1200 KwH annually per KW installed or about 11,400 KwH's annually, **11,400/189,760 = 6% of the total annual use.**

Table 1: Town Facility PV

	No. of Panels Installed	System Size	Annual Production per KW installed	Total Annual production	2013 Actual Energy Use	Annual est. % reduction
Town Hall	52	13.26	1,200	15,912	265,120	6.00%
Deloney RR	40	10	1,200	12,000	32,480	36.95%
Home Ranch	18	4.59	1,200	5,508	59,240	9.30%
PW Shops	36	9.5	1,200	11,400	189,760	6.01%
Parking Garage	14	2.8	1,200	3,360	207,840	1.62%
Totals:	160	40.15		48,180	754,440	6.39%

We know much has been done over the last six years to increase our overall energy efficiency in Town Facilities, but we still as an organization need to maintain a strategic and disciplined approach to achieve the 40 x 20 goal. This action plan defines strategies, short term and long term recommendations to help achieve this objective. Our decline in energy use is largely due to the energy efficiency improvements made since FY2006. Though the upgrades to our facilities improved our overall efficiency, it is still not enough. Human behavior and the daily choices each employee of this organization makes will further render an impact on our consumption. We strongly encourage and ask each member of this organization, from the Town Council to the people who deliver our daily municipal services, to choose conservation and employ the best practices in regards to energy efficiency in all Town Facilities.

BASELINE

Energy usage for all Town Facilities (from FY2006, excluding the Parking Garage) is on a decline, trending downward from 85,371 ³BTU/ft² to 67,201 BTU/ft² indicating an efficiency of 21.28%. By measuring a buildings' energy efficiency on a BTU/SF basis, there is flexibility to allow for expansion and contraction of Town facilities. For example, in FY2009, the Town replaced the old Cache restroom with a new, efficient Deloney restroom, growing from 890 ft² to 1,150 ft². Additionally, in FY2012, the Town replaced the old Home Ranch restroom with a new LEED Gold facility, expanding the square footage from 1,125 ft² to 4,752 ft². By measuring

efficiency in terms of square footage, gains were made even though the buildings grew in size: Deloney and Home Ranch are respectively 16.4% and 64.24% more efficient. Another important addition to the Town's building inventory is the Parking Garage, which was completed in FY2008, adding 122,000 ft² of space. Though the Town took ownership in FY2008 there still was lingering construction on site that inflated our efficiency to 25,207 BTU/ft.² for that year. A more appropriate baseline year would be FY2009 which represents a full fiscal year of ownership with no ongoing construction. Therefore, the Parking Garage efficiency was compared from FY2009 to FY2013 (-39.99%) in the graph below. What is significant in regards to this facility is the square footage (and correspondingly low energy usage) that affects our combined efficiency. In essence, the Parking Garage is helping our efficiency because of the square footage.

Table 2: BTU / SF / No Garage

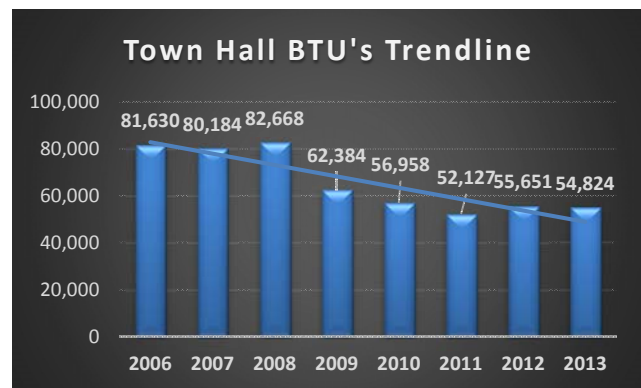
Facility	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	% of FY06
Town Hall	81,630	80,184	82,668	62,384	56,958	52,127	55,651	54,824	-32.84%
Deloney RR	115,269	0	12,727	66,027	99,096	101,707	101,470	96,367	-16.40%
Home Ranch	128,570	115,559	120,485	132,434	113,263	127,542	43,715	45,981	-64.24%
PW Shops	85,010	90,109	82,178	72,304	75,028	63,995	73,061	74,722	-12.10%
Total: BTU/SF	85,371	87,496	82,740	71,897	70,883	62,520	66,325	67,201	-21.28%

Facility	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	% of FY06
Parking Garage BTU/SF	0	0	25,207	9,686	4,758	3,730	4,333	5,813	-39.99%

Combined	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	% of FY06
All Buildings BTU/SF	85,371	87,496	82,740	27,864	25,273	21,969	24,425	29,520	-65.42%

STRATEGIES

1. Make specific changes to Town-owned facilities to improve their energy efficiency including changes to:
 - a. HVAC systems,
 - b. windows,
 - c. points of entry/exit,
 - d. energy efficient lighting and day lighting.
2. Add more alternative energy sources.
3. Change the employee culture to embrace more energy saving tactics while at work.
4. Prioritize projects by estimating total energy savings and conduct cost-benefit analyses.
5. Collaborate with the Jackson Hole Energy Sustainability Project to maximize use of resources, partner on projects and share information for the benefit of the entire community.

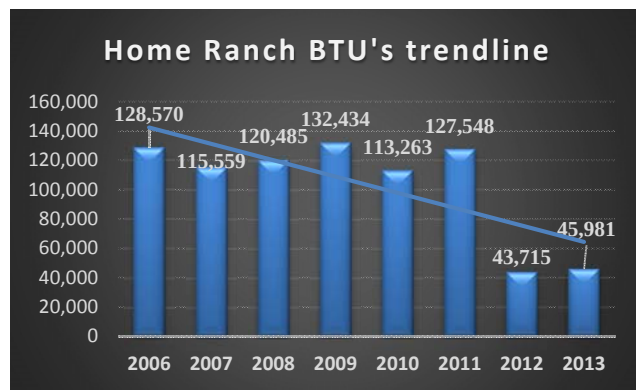


6. Identify and engage a few key mentors that have in-depth data, knowledge and technical skills to assist the team in identifying projects, assessing feasibility, conducting cost-benefit analysis and data collection and management.

SHORT-TERM RECOMMENDATIONS: 0 TO 6 MONTHS

Where used, the \$ symbol indicates that future costs may be associated and will be presented to Town Council at the appropriate time for approval.

1. Perform air pressure/seal tests and temperature analysis on all Town buildings to see where we are having the most loss of heat in the winter and cooling in the summer.



2. Add ceiling fans in Town Hall to prevent heat from the first floor from getting lost in the ceiling or being completely wasted on the second floor. \$

3. Install new HVAC management software for Deloney restroom, Public Works, Parking Garage and the new START facility. \$

4. Install honeycomb style window treatments (blinds) on all windows at Town Hall so that we can better insulate the

windows. \$

5. Consider the installation of either: glazing to the south facing windows or awnings at Town Hall to better reflect the sunlight and help cool the building in the summer. \$
6. Maintain a constant "best practices" temperature for all facilities for both summer and winter and hold employees accountable to dress accordingly (i.e., using additional space heaters in offices).
7. Cross-train senior management on efficient operation, additional savings potential and resources needed as part of asset management.
8. Develop a reporting system for monthly/quarterly data that is clear, concise and useful to both senior and middle management. This may include information in the form of charts and graphs that informs and educates teams about energy use, demand, costs, savings and progress.
9. Create a team of staff to investigate causes and effects of Facility energy usage behavior to better understand spikes and dips in terms of energy management.

LONG-TERM RECOMMENDATIONS: BEYOND 6 MONTHS

Where used, the \$ symbol indicates that future costs may be associated and will be presented to Town Council at the appropriate time for approval.

1. Install PV Solar Panels on all Town owned facilities. \$



a. The new proposed photovoltaic installations are extremely vital in helping us achieve our new 40 x 20 goal. We present for your consideration the four locations we would like to install photovoltaic systems: 1) Town Hall building, 13.26-kW PV system, 2) Deloney Restrooms & Bus shelter building, 5 additional-kW PV

system to go along with the existing 5-KW, 3) Home Ranch Restrooms building, 4.59-kW PV system and 4) Public Works Facility, 9.5-kW PV system. The combination of all four facilities would equal 32.35 kW of renewable electrical energy. (Complete)

2. Invest in a heat-recovery ventilator (HRV) system to vent fugitive heat in the computer server room and funnel it into our HVAC system, reducing the need for server cooling and helping to heat the building. \$
3. Install Sonotube's at the Public Works shops in order to bring natural light into the buildings with as little heat loss as possible. \$
4. If the current HVAC system cannot be tuned correctly then we may have to invest in a secondary unit at Town Hall. Currently, staff is working with ES2 Engineering Systems to determine the best course of action.
5. Consider creating a Building Maintenance position. Currently, building maintenance is being performed by multiple departments. The complexity of each new building is exponentially higher and the degree of detail to maintenance, efficiency and competence could be justification for this new position. Further, having one employee responsible for all of our Facilities would create accountability and a working knowledge of the current systems.

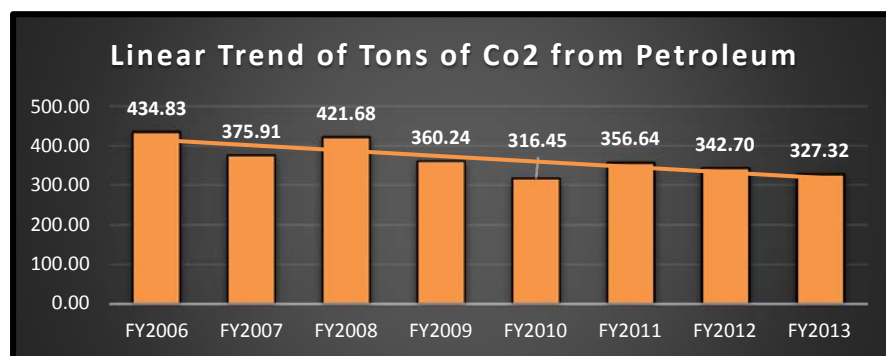
40 x 20 INITIATIVE: GOAL 2

ALL NON-START TOWN VEHICLES AND EQUIPMENT WILL BE 40% MORE FUEL-EFFICIENT BY JUNE 30, 2020 FROM FY2006

INTRODUCTION

Following in the footsteps of the 10 x 10 Initiative, the Town continues to strive toward a more efficient future with the introduction of the 40 x 20 Initiative. Regarding fuels, the ultimate goal is to continue to operate at a level that is at least 40% more fuel efficient than the FY2006 baseline. In doing so, the Town can not only save on fuel costs throughout our fleet of vehicles and equipment but also reduce greenhouse gas emissions.

“Transportation accounts for approximately 80% of the total carbon emissions in the community and should be a focus of the community’s efforts to reduce energy consumption. Reducing fuels consumed for transportation and using renewable fuels has the greatest potential to reduce the community’s overall carbon emissions and consumption of non-renewable resources.”¹



By working to create a fleet of vehicles and equipment that utilizes the latest fuel efficient technologies, we hope to have less of an impact on the Greater Yellowstone Ecosystem as well as regions beyond. As opportunities develop, the Town will work to increase our fuel efficiency and become a model to communities worldwide.

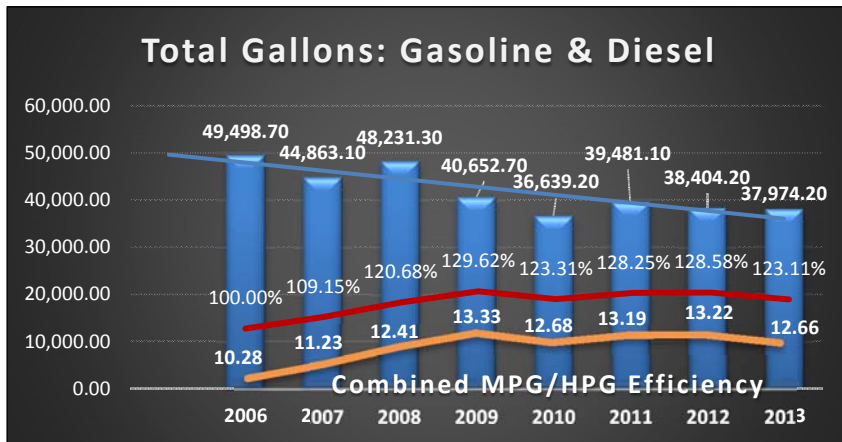
BASELINE

This goal is measured on a mile per gallon (MPG) per vehicle and hours per gallon (HPG) per equipment basis from baseline FY2006 and will continue to be measured until June 30, 2020. To follow please find current data that shows progress as of FY2013 towards the stated goal.

According to current calculations, we are 23.11% more fuel efficient per vehicle/equipment than the baseline of FY2006. Over the last three years, the Town has averaged a -26.65% efficiency. This illustrates how we as an organization have made great strides in fuel efficiency but yet have much work to do in achieving the goal.

¹ Jackson/Teton County Comprehensive Plan- Principle 2.3— Reduce energy consumption through transportation

STRATEGIES



1. Continue updating energy use data once a month for all categories for which the Town is tracking. We are tracking two areas 1) the actual amounts for each energy source used and 2) all dollar costs associated with energy use in an effort to account the total energy and costs used annually by the Town of Jackson.

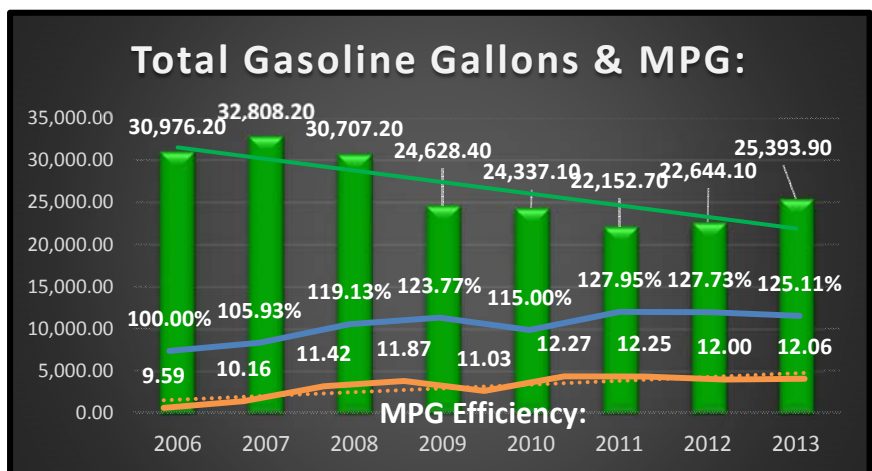
2. Identify potential fuel efficiency options/technologies for

further evaluation.

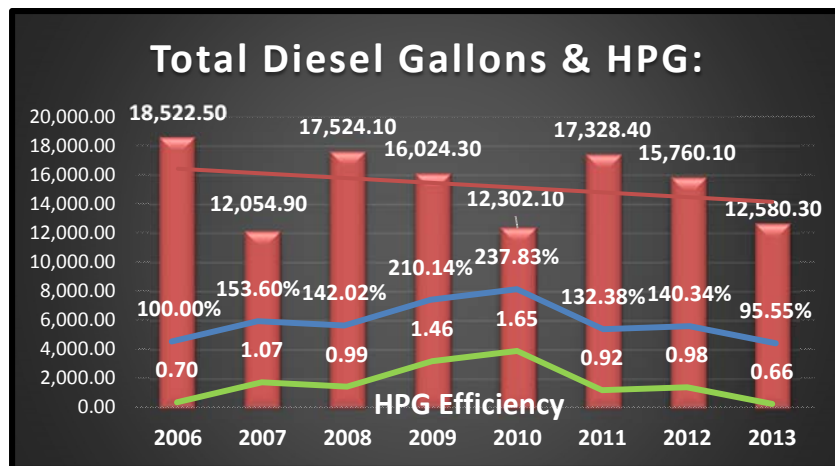
3. Review and identify opportunities for revision of the "Best Practices" standards for entire Town fleet.
4. Create a work environment which allows employees to share rides when working on similar tasks or at nearby locations.
5. Improve fuel efficiency of currently owned fleet vehicles and equipment.
6. As vehicles reach the end of their 'life cycle' replace them with newer and more fuel efficient vehicles based on an assessment of each department's needs vs. current vehicle owned.
7. Explore the costs & benefits of alternative fuel sources.

SHORT-TERM RECOMMENDATIONS: 0 TO 6 MONTHS

1. Estimate the cost of fuel consumption associated with the required idling of police vehicles with pending retrofit of existing vehicle computer systems.
2. Continue the guidelines set forth in 10 x 10 Initiative with regard to fuel efficiency.
3. Continue to monitor fuel efficiency data in all TOJ vehicles and equipment per department to ensure that progress is being made.
4. Eliminate unnecessary weight in vehicles.
5. Maintain proper tire pressure.
6. Utilize currently owned vehicles that get higher MPG over those with worse MPG.
7. Continue use of throttle body cleaner that gives better MPG in gasoline burning vehicles.



- Continue training new employees regarding proper driving procedures and efficiencies, work



to change driving habits of current/new employees, and review the “Fleet Principles, Practices & Procedures” more regularly to ensure all employees know their responsibilities.

- Explore opportunities for employees carpooling in vehicles with higher MPG.

- Develop a reporting

system for monthly/quarterly data that is clear, concise and useful to both senior and middle management. This may include information in the form of charts and graphs that informs and educates teams about energy use, demand, costs, savings and progress.

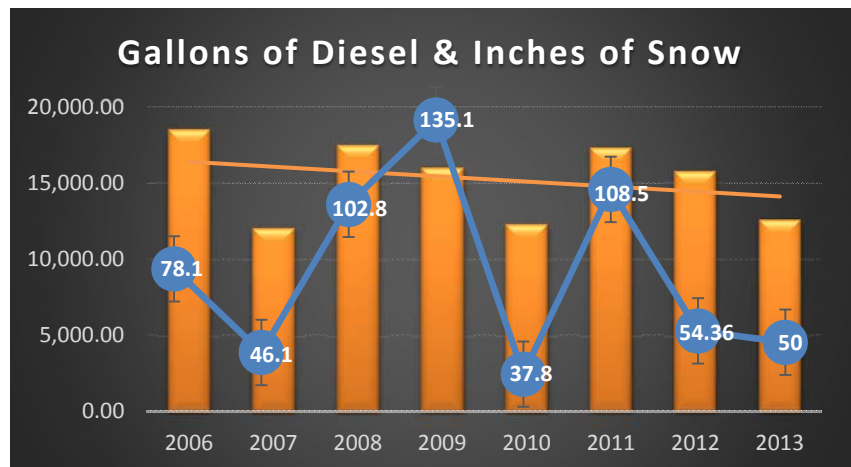
LONG-TERM RECOMMENDATIONS: BEYOND 6 MONTHS

- Encourage Town Council to consider the 20 year replacement schedule each budget season.

This will ensure that as current fleet vehicles and equipment reach the end of their designated ‘life cycle’, they will be replaced with new vehicles that operate more efficiently and/or run on alternative fuel sources (electric, CNG, hybrid) \$

- Explore the installation of Electric Vehicle charging stations at Town facilities

that are connected to photovoltaic systems as a means of replacing gasoline powered vehicles for electric vehicles.



40 x 20 INITIATIVE: GOAL 3

WE WILL BE 20 % MORE EFFICIENT WITH TOWN OF JACKSON WATER CONSUMPTION BY TOWN FACILITIES BY JUNE 30, 2020 FROM FY2010

INTRODUCTION

In 2007, the 10 x 10 Initiative committed to a 10% reduction in electricity and fuel consumption but did not commit to any specific water consumption goals. With its recent adoption of the 40 x 20 Initiative, the Town of Jackson has committed itself to water conservation and efficient water use in its facilities.

Water conservation is defined by the US Water Resources Council as activities designed to (1) reduce the demand for water, (2) improve efficiency in use and reduce losses and waste of water, and (3) improve land management practices to conserve water. Conservation, implemented as long and short-term water management practices, is fiscally responsible and aligns with Town Council's Environmental Stewardship statement of strategic intent and principle 2.5.a. of the Comprehensive Plan. Principal 2.5.a. relates to encouraging water conservation and states:

*"While our community is lucky to have abundant water supplies, water conservation should still be pursued in order to conserve energy and manage natural resources responsibly. As fresh water resources are depleted, the energy required to provide potable water increases. Conservation of water saves aquifer supplies for future generations, protects habitat and respects downstream users. Too better encourage water conservation, municipal pricing should reflect the true long-term cost of production and encourage water conservation. The Town and County will also encourage practices that demand less water, such as landscaping with native species."*¹

Increasing water consumption efficiency also aligns with Town Council's Economic Sustainability statement of strategic intent. Recently, Town Council approved phasing in rate increases to fully fund water and wastewater operational and capital costs. Increasing water consumption efficiency inherently lowers impacts to the water and wastewater systems, and thereby reduces maintenance and upkeep costs of those systems. Although, water consumption at Town facilities amounts to a small fraction of total water and wastewater

¹ Jackson/Teton County Comprehensive Plan- Principle 2.5.a. — Encourage Water Conservation

system use, it is important for the Town to lead by example within the community and to set a tone for increasing water consumption efficiency.

Water management planning serves as the basis for any successful water reduction effort and generally addresses water use reductions in four areas:

- Reducing water losses (i.e., leaks)
- Increasing the water efficiency of fixtures, equipment, systems and processes
- Educating employees and occupants about water efficiency to encourage water-saving behaviors
- Reusing onsite alternative water that would otherwise be discarded or discharged to the sewer (i.e., reusing rainwater to water landscapes areas)

BASELINE

The water team audited six facilities for this report: Town Hall, Public Works, Deloney Restroom, Home Ranch Restroom, the Parking Structure and the Wastewater Treatment Plant. Please note that Town parks and the Recreation Center were not included in the facility list because they are managed by Parks and Recreation, a joint department directly managed by Teton County. The water audits analyzed water use at each facility so that the information could be used to identify ways to make each facility more efficient. Please see Chart A which illustrates the water use sources as of spring 2013 per facility that can be used to determine possible retrofits in the future.

Although we are in the early stages of the 40 x 20 Initiative, water use patterns for our facilities have emerged since the 2010 baseline year. It is important to note that one cannot compare efficiency from one facility to another because use patterns differ. For example, we know that the Parking Garage has only low flow fixtures but it also is highly used by the public. Conversely, the Public Works building has inefficient fixtures but fewer users. Currently, the Wastewater Treatment Plant is the largest water user, mostly due to irrigation use and the prevention of water lines from freezing in the winter. The Public Works building is the second largest user due to the use of the wash bay, outdated fixtures and the irrigation system which extends to the fairgrounds. The Deloney Street restroom is the third largest user of water, due to irrigation and high public use. Please see Chart B which illustrates gallons per fixture per facility in baseline year 2010.

STRATEGIES

1. Accurate Measuring & Forecasting
 - a. Establish a separate baseline of water consumption for each Town facility. (Completed)
 - b. Establish irrigation meters at applicable facilities to separate facility use from irrigation to more accurately measure consumption.

- c. Continue to track water consumption on a regular basis and convert data to efficiency metrics.
 - d. Forecast water efficiency relating to water consumption for 2020.
- 2. Conduct a water audit of Town facilities. (Complete)
- 3. Set policy relating to landscaping at any new Town facilities to include xeriscaping and xerogardening.
- 4. Assess feasibility of reclaiming water-intensive landscaped areas into xeriscaped and/or xerogardened beds.
- 5. Set policy for implementing best practices and minimum standards for any new Town facility
- 6. Explore EPA Partnership Program: WaterSense.
- 7. Consider implementing policy that requires all Town facilities to use only WaterSense labeled or similar products.

- a. WaterSense products are typically 20% more water efficient and perform as well as or better than conventional models. WaterSense faucets and aerators are 30% more efficient. WaterSense toilets use 20% less water per flush. All products that are WaterSense come with an approved label.



SHORT-TERM RECOMMENDATIONS: 0 TO 6 MONTHS

Where used, the \$ symbol indicates that future costs may be associated and will be presented to Town Council at the appropriate time for approval.

- 1. Maintenance of leaking faucets.
- 2. Implement leak detection systems. \$
- 3. Upon review of available technology, develop a plan to implement a devise retrofit program for fixtures such as shower heads, faucets, toilets, urinals, etc... And implement upon Council approval. \$
- 4. Conduct an irrigation audit to review irrigation systems in place and to consider retrofitting the water control boxes with weather-based irrigation controllers and assure that the sprinkler heads are fully functioning and installed in appropriate locations and on appropriate watering schedules.
- 5. Create a log at the wash bay to determine on the job use vs. private employee use, outside organization use, etc...
- 6. Explore closing drip boxes and watering mature trees at the wastewater treatment plant less.

LONG-TERM RECOMMENDATIONS: BEYOND 6 MONTHS

Where used, the \$ symbol indicates that future costs may be associated and will be presented to Town Council at the appropriate time for approval.

1. Bury water pump pipes deeper at wastewater treatment plant to avoid a required continual drip during winter months. \$
2. Explore facilities where cisterns could be utilized and implement where possible. \$
3. Explore recirculating hot water systems for large buildings. \$
4. Explore replacing sod with either: native grasses, xeroscaping or specific native plants with low water needs. \$
5. Explore landscaping requirements that reflect low water consumption for future facilities.
6. Reestablish a wash bay policy to apply to only Town and County vehicles and to increase subjectivity with regard to increasing flexibility for vehicle washing frequency based upon analysis of wash bay log.

CHART A

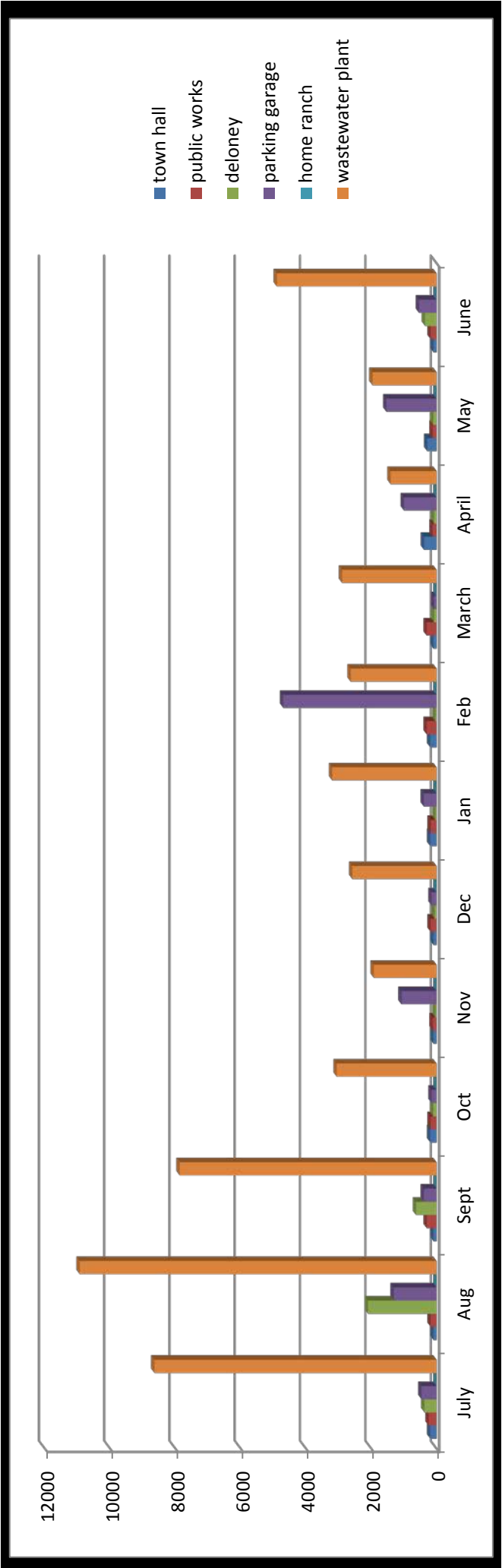
Water Use Sources By Facility in Spring 2013

Facility	Toilets	Urinals	Showers	Sinks	Irrigation	Other	Notes
Town Hall	10, 3 of which are low flush	1 Sloan water free	2 older model	12, 1 of which is a timed sink	yes	water fountain; water machine	51 full time employees
Waste Water Treatment Plant	1, 3.5 gallon per flush	-	1	2 dish sinks, 1 bathroom sink, 2 industrial sinks	3 systems, one at each building	-	Shower only used in case of emergency
Public Works	5, 3 of which are low flush	3, that use water	-	6 faucets	yes	Wash bay	71 total employees
Home Ranch	10 low flush	3	-	7 sensor faucets	yes	cistern	Hours: 7 days, 7am - 10pm
Parking Garage	currently 6 low flush	2 that use water	-	4 sensor faucets	no	faucet for cleaning	Hours : 7 days, 7am - midnight
Deloney Restroom	currently 6 low flush	2 that use water	-	4 sensor faucets, 1 mop sink	yes	water fountain	Hours: 7 days, 7am - 10pm

CHART B

Gallons per Fixture FY2010 Including Irrigation

	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
Town Hall	190.5	95.2	95.2	190.5	95.2	95.2	190.5	190.5	95.2	381	285.7	95.2
Public Works	242.4	181.8	303	181.8	121.2	181.8	181.8	303	303	121.2	121.2	181.8
Deloney Restroom	368.4	2105.3	631.6	105.3	35.1	52.6	35.1	35.1	70.2	70.2	105.3	350.9
Parking Garage	461.5	1307	384.6	153.8	1076.9	153.8	384.6	4692.3	76.9	1000	1538.5	538.5
Home Ranch	0	0	0	0	0	0	0	0	0	0	0	0
Wastewater Plant	8642.4	10929.5	7866.7	3058.1	1921	2577.6	3197.1	2631.4	2893.8	1407.6	1961.4	4891.4



40 x 20 INITIATIVE: GOAL 4

WE WILL DIVERT 50% OF OUR WASTE STREAM BY JUNE 30, 2020

INTRODUCTION



“The community will minimize the amount of solid waste it directs to landfills with a goal of “zero waste” by increasing efforts such as recycling and composting of waste. Disposing of solid waste in landfills requires energy for waste transportation, land moving, and other landfill operations. Landfill disposal also requires increased disturbance of otherwise open spaces due to the length of the decomposition process. The community will increase opportunities for recycling,

reuse, and composting and seek productive uses for solid waste such as waste-to-energy solutions to minimize the solid waste that must be placed in a landfill. In addition, the Town and County will lead by example by using products that can be recycled or composted and encouraging all members of the community to do the same.”¹

Waste reduction (or prevention) is the preferred approach to waste management because waste that never gets created does not have management costs. For waste reduction to work, it has to be measured. Most of our research has been spent on trying to facilitate a quantitative (and sustainable) method for measuring trash. In our quest to understand this task, we met with Heather Overholser, Director of Integrated Solid Waste and Recycling, to discuss possible methods and outcomes. Ms. Overholser suggested we measure how much we recycle and measure how much trash we produce. Currently, the Town of Jackson has three dumpsters: two at Public Works and one at Town Hall. The dumpster at Town Hall is also used by Teton County, who pays for that dumpster. We also placed calls with local trash contractors and the two we currently use, Teton Trash and Westbank Sanitation, were not willing to weigh our waste outputs. One new contractor, Yellow Iron, is very willing to do this service for the Town and weigh our waste output. Yellow Iron is considering installing a scale on one of their waste trucks and would perform the same duties as our current waste hauler, but also, supply us with accurate measurements. In turn, we would be able to further measure all diverted waste(s) and calculate what our diversion rate is.

Our options are limited, but we feel there are ways in which we can establish a baseline. We have detailed two methods below in which we can begin to understand our outputs. With this in mind, our new baseline will reflect FY2014. What is important is that the process of creating a baseline and collecting data going forward, will need to be sustainable, easy to collect...and most importantly, accurate.

¹ Jackson/Teton Comprehensive Plan, Policy 2.5.b: Manage our waste stream for Sustainability

BASELINE

Several options exist with regard to collecting baseline data:

1. **Measure our source input.** One way to reduce what goes out is to reduce what goes in, or, in our case, what we purchase. This data could be measured with the expectation that we could show a reduction in what we purchase, keeping in mind that we are tracking items that will enter the waste stream.
2. **Measure source output.** Several options exist to measure trash output, i.e. what is in the dumpster:

Option A.) Request our janitorial service to follow the “one bag” program (and all other departments that do not use janitorial staff). As they clean our offices, they will only throw away a large, full trash bag into the dumpster. A log will be kept for every full trash bag that is discarded. We could use the total number of trash bags as a baseline. A contract amendment with the janitorial service provider may be required to address a change of scope and/or associated fees. If it is determined this is the most feasible option to move forward in establishing a baseline, it should be implemented as soon as possible.

Option B.) Use Yellow Iron as our waste contractor. Yellow Iron would weigh our trash output each week and thereby give us accurate weights for our trash outputs, culminating with a year of baseline data. It should be noted that this option requires the Town to pay for its own trash service at Town Hall and that the Town request the County to move its dumpster that it currently shares with the Town free of charge.

Several options exist with regard to measuring recycling levels, including:

- Weighing facility recycling bins. Curbside Recycling has indicated that it can weigh collected recyclables (but at a much higher fee) or the Town could employ its current staff to weigh and report recycling bins at all facilities provided proper equipment is made available.
- Request the Public Works Department to track all miscellaneous diverted wastes such as tires, metal, oil, asphalt, etc... either by using a tracking system or by weighing actual materials.

The Venture Team recommends that Option B described above be implemented in conjunction with measuring recycling levels as soon as possible, should Council wish to measure output.

STRATEGIES

1. Establish a baseline of data by collecting background information on our facilities and our current purchasing, waste generation and management practices.
2. Identify potential waste reduction options for further evaluation.
3. Adopt “Best Practices” standards for all Town departments.
4. Distribute more recycling bins at facilities/offices to make recycling easier and more efficient.
5. Track all recycling output and continue looking for more ways to reuse/recycle. This measurement would be used in calculations for diversion.



SHORT-TERM RECOMMENDATIONS: 0 TO 6 MONTHS

1. Establish a think before you print, campaign, “can I email this?” Even though we recycle most of our printing paper, we still need to buy it. In its effort to reduce paper, Bank of America saved significant amounts of paper by reducing and consolidating various standard forms. The goal here should be to reduce how much paper we use, therefore reducing the need to buy more.
2. Create a “double-side” printing policy; including a requirement that all future purchases of copiers have this capability. All Town of Jackson printers should be set to print double sided.
3. Collect paper that has been used on one side and reuse as draft paper for additional print jobs, in fax machines, for scratch pads, and photo copies.
4. Make computer files, not paper files whenever possible. Most files can be kept on the Jdrive or other hard drives.
5. Email employee check stubs instead to printing a copy for each employee every two weeks.
6. Offer a “pay on-line” service for water and sewer customers.
7. Offer recycling containers for public use in Town Hall lobby.
8. Determine the best method for accumulating baseline data.
9. Partner with “WasteWise”, an EPA initiative that has become a mainstay in environmental stewardship. Advantages for joining are numerous and can be located at www.epa.gov.
10. Discontinue needless junk mail by mailing the Direct Marketing Association and asking them to remove our organization from their list.
11. Install reusable air conditioning and furnace filters where applicable.
12. Where appropriate, order supplies in bulk to reduce excess packaging.
13. Require that no department purchase any unnecessary paper/plastic products (i.e., paper plates, cups, utensils) for break rooms.

LONG-TERM RECOMMENDATIONS: BEYOND 6 MONTHS

Where used, the \$ symbol indicates that future costs may be associated and will be presented to Town Council at the appropriate time for approval.

1. Replace all paper towel stations in bathrooms with energy efficient air hand dryers or similar alternative. \$
2. Go to a paperless fax system.
3. Push solid waste providers to measure trash output.
4. Push recycling providers to measure recycled output.
5. Continue employee education on the importance of reducing waste. The Recycling Center indicated they would be happy to talk to our employees.
6. Keep staff and management informed on the results of their efforts.

40 x 20 INITIATIVE: GOAL 5

We will be 20% more energy efficient in producing water for our service area by June 30, 2020 from FY2006.

INTRODUCTION

Our water systems are comprised of 60 miles of water mains, 7-wells, 3-booster stations and 3 water storage tanks. The estimated water system replacement cost is \$65-million. In July 2010 we installed 25-KW Photovoltaic system with 144 panels at Well #5 as a measure to help save energy.



The Public Works water team's mission: Is our commitment to Quality on Tap! The members of the water team for the Town of Jackson, Wyoming, are the caretakers of the public water supply for residents and guests. We strive to be professional yet accountable and always have time for the concerns and needs of our customers.

BASELINE

Our current data tracking shows the following information on how we are doing;

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Gallons billed	922,132,160	990,344,857	921,367,252	950,205,381	831,559,360	862,145,363	881,303,368	890,507,375
KWH's used	1,900,033	1,970,525	2,048,560	2,087,713	1,841,566	1,785,447	1,999,036	1,944,515
Therm's used	2,328	2,376	2,759	1,955	2,056	2,116	1,597	1,982
BTU/per Gallon	7.29	7.04	7.89	7.71	7.81	7.32	7.93	7.68
% of FY2006	100.00%	96.51%	108.29%	105.73%	107.14%	100.39%	108.72%	105.34%

BACKGROUND INFORMATION

In June of 2002, the Town of Jackson PW Department completed an energy saving audit of the water and sewer systems. This audit was completed through Bonneville Power Association (BPA) with the services of BacGen Technologies an energy services company. Based on the finding of this report, the PW Department began to improve the energy efficiencies of all recommended items list in the report. These items included for Water:

- The replacement of Well 5's motor to a more efficient system

Beyond the recommendations in the BacGen report, the PW Water Department has, since 2002, replaced all seven water well pumps due to maintenance needs. These replacements were completed with the most energy efficient systems that could be installed without impacting the water system. In addition to the well pumping systems, the PW Water Department has completed upgrades/re-builds of two of its three booster pump stations. These

rebuilt booster stations used the best technologies at the time to ensure maximum energy saving for the water utility systems.

STRATEGIES

We will continue to look into energy conservation/efficiency which might be gained for the water and sewer utilities; the Public Works Department is committed to using the most energy efficient systems for any and all future improvements and maintenance required for upgrades and/or to extend our systems useful service life.

Currently there is little potential to create significant reductions in the energy costs and/or Btu per gallon produced for the water systems without a drastic reduction in public use. Possible recommendations: Town wide water conservation program, which would require community education and we would most likely need to increase water user rates to shift user behaviors to make up for lost revenue to cover operating and capital replacement costs, e.g. we could look at inclining block rates and/or other conservation types of rate charges which move behavior towards water conservation and increase revenue. We will continue to monitor our monthly energy use data trends and continue to look at how, when and why we operate our water distribution systems.

To meet and exceed our Comprehensive Plan:

Principle 2.5—Conserve energy through waste management and water conservation:

The community will reduce the amount of energy required to distribute, clean, and dispose of water and waste through conservation efforts. Our current water consumption and waste management practices will have long-term adverse impacts on the ecosystem and the community's energy demand if conservation measures are not pursued.

40 x 20 INITIATIVE: GOAL 6

WE WILL BE 40% MORE ENERGY EFFICIENT PER GALLON OF WASTEWATER TREATED AND DISCHARGED THROUGH OUR WASTEWATER TREATMENT PLANT BY JUNE 30, 2020 FROM FY2006.

INTRODUCTION

The Town of Jackson's Wastewater systems are comprised of 55-miles of sewer mains, 5-lift stations, 1-wastewater treatment plant with 10-open lagoon ponds. The estimated replacement cost is \$35-million for all of our wastewater treatment systems. Further, we have installed a photovoltaic system in two phases:

- Phase 1 (2009): 27.3 KW System composed of 144 panels.
- Phase 2 (2010): 165 KW System composed of 702 panels.



Combined, both phase 1 and 2 PV systems produce 192.3 KW with a total of 846 panels. The Public Works wastewater team's mission: *To protect Public Health and Safety, preserve the environment and enhance the quality of life. We will exceed the expectations of our customers while acting in a forward thinking, professional and creative manner.*

BASELINE

Our current data tracking shows the following information on how we are doing to date:

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Gallons Treated	684,770,000	724,565,000	716,566,000	745,766,000	673,789,000	648,839,000	706,535,000	600,805,000
KWH's used	5,930,636	5,661,624	5,366,633	5,493,459	6,397,059	6,019,442	4,196,271	4,512,358
Propane used	11,945	11,163	12,154	10,011	9,343	10,129	8,600	12,050
BTU/per Gallon	31.22	28.13	27.17	28.13	33.72	33.14	21.43	27.54
% of FY2006	100.00%	90.12%	87.05%	90.12%	108.01%	106.18%	68.64%	88.23%

BACKGROUND INFORMATION

In June of 2002, the Town of Jackson PW Department completed an energy saving audit of the water and sewer systems. This audit was completed through Bonneville Power Association (BPA) with the services of Bac-Gen Technologies, an energy services company. Based on this report, the PW Department initiated all recommended energy efficient improvements recommended. For the Wastewater Treatment Plant:

- Install "DO" sensing systems at the wastewater treatment plant
- Install a master PLC control systems for the aerators at the treatment plant
- Install a SCADA system at the treatment plant
- Replace wire systems to aerators
- Replace the blower system at the treatment plant.
- Replace the five existing Raw Wastewater pumps at the treatment plant.

The energy efficiency upgrades started in 2003 and currently, all of the recommendations above have been completed with the exception of the Raw Wastewater Pumps. The RW pumps are currently scheduled to be replaced over the

next 5-years, with more efficient models. Further, in July 2009 the Town hired Ameresco Engineers (an energy service company) to help perform an additional investment grade energy audit in order to find ways to reduce our energy consumption. These are the list of recommendations they made:

- Install programmable thermostat's
- Upgrade SCADA system
- Reduce Pumping Head on Raw Wastewater
- Optimize Intermediate Pump Staging
- Reduce Pumping Head on Intermediate Pumps
- Replace Existing Aerators with High Efficiency units
- Install Jockey Blower for Optimum Aeration
- Automate Aerators with DO Sensor Controls

We only accepted a few of the energy measures: SCADA system, replaced existing aerators with high efficiency units, install jockey blower for optimum aeration and automate aerators with DO Sensor Controls from which they recommended were the big energy and dollar savings measures. Altogether we have invested over \$2,829,000.00 in energy efficiency measures to help improve our systems and reduce our energy consumption.

STRATEGIES

It should also be noted that once our new systems have been refined over the next few years, it may be possible to further reduce peak energy demand and help reduce our energy charges at the plant. The Public Works Wastewater team will be exploring that possibility as the power usage and the new SCADA/PLC systems are fully understood and operating at their full potential.



We are starting to make great progress on saving energy/money even in the face of much stricter EPA/DEQ water quality permitting and testing requirements, which makes the savings we are achieving truly remarkable. We

are committed to achieving the highest water quality at the lowest energy and dollar cost to attain this goal.

SHORT-TERM RECOMMENDATIONS: 0 TO 6 MONTHS

The WWTP team will continue learning how to fully operate our new SCADA system to maximize potential energy savings and meet and/or exceed water quality. Further, we will continue to monitor our monthly energy use data trends and continue to look at how, when and why we operate our wastewater treatment systems.

LONG-TERM RECOMMENDATIONS: BEYOND 6 MONTHS

Since our efficiency upgrades, the WWTP has witnessed considerable energy savings. Though there are a few more energy efficiency upgrades to be made, the operators at the plant have taken the next steps into looking for more ways to reduce consumption and increase efficiency. During the summer of 2013, the WWTP team started investigating possible energy saving methods by altering the flow pattern through the 10 ponds located at our plant. Historically, the sewer influent from town would be treated by flowing through all 10 lagoons before reaching our outfall in the Snake River.

Since the flow utilized all ten ponds on site, there was a huge energy demand to treat the wastewater especially in the last five ponds which have air supplied by a 250 Hp blower/diffused air system. This blower typically runs 24 hours a day, seven days a week from May until November. With this in mind, the WWTP team initiated a “bypass”, meaning that four of the last five ponds serviced by the 250 Hp blower were no longer being utilized, beginning in June of 2013.

The plant operator's also turned the last pond into a "polishing pond" which does not require the addition of air (oxygen). By initiating this by-pass, DEQ permit standards were maintained and in some cases, exceeded. It should be noted that this has never been attempted before at the wastewater treatment plant. The WWTP team spent considerable time researching this by-pass idea, even discussing the idea with a microbiologist and professor in the wastewater treatment field. The outcome of the by-pass is still in its infancy in terms of how much energy will be saved. But, if we compare July 2012 to July 2013 in terms of energy consumed, the WWTP has seen a decrease of 67,200 Kwh. This equates to a 14.63% savings for the month of July alone. Please see Table 1, comparing the same months in 2012 to 2013. These savings are above and beyond all of the energy upgrades we have made at the WWTP due to the "bypass" initiated.

Table 1: Bypass Savings

WWTP Facility	Kwh's Saved 2012-2013					
	July	Aug	Sept	Oct	Nov	Total
Main Building	67,200	135,300	68,700	154,600	111,300	537,100
Savings by Month	14.63%	26.98%	20.95%	43.18%	37.21%	28.59%

In the long-term, the Wastewater team will constantly review changes to our system in order to exceed our DEQ permit and provide a service to the community at the lowest cost possible. Further, the operator's will continue to pursue water conservation in order to save energy, manage our natural resources responsibly and utilize the most energy efficient wastewater treatment methods and technologies.

To meet and exceed our Comprehensive Plan:

Principle 2.5—Conserve energy through waste management and water conservation:

The community will reduce the amount of energy required to distribute, clean, and dispose of water and waste



through conservation efforts. Our current water consumption and waste management practices will have long-term adverse impacts on the ecosystem and the community's energy demand if conservation measures are not pursued.

Policy 2.5.c: Reduce energy consumption in wastewater treatment: The community should utilize the most energy efficient wastewater treatment methods and technology to discharge effluent that meets or exceeds the quality of the receiving waters at any time. Wastewater treatment is extremely important to the health of the ecosystem and the community, but can be an

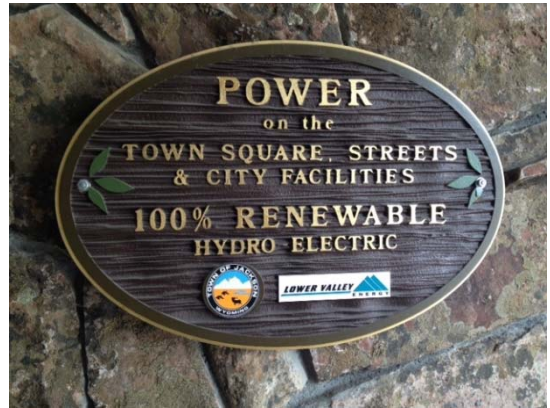
enormous consumer of energy. The Town and County will lead by example in attempting to exceed State discharge requirements while limiting the amount of energy consumed by the wastewater treatment processes.

40 x 20 INITIATIVE: GOAL 7

WE WILL MAINTAIN 100% OF THE ELECTRICAL ENERGY USED FOR TOWN OPERATIONS FROM RENEWABLE ENERGY SOURCES

INTRODUCTION AND BASELINE

In June of 2007, the Town of Jackson announced that 100% of its municipal operations would be powered by renewable energy. Most of this energy is generated by the Strawberry Creek hydroelectric project which is a 1.5-MW certified low-impact facility. By continuing to purchase and/or produce 100% of the energy needed for municipal operations from renewable resources, the Town will continue to advance a program of ecosystem stewardship as specified in the following principles:



“In order to reduce the emission of greenhouse gases that contribute to climate change, the community should reduce its consumption of energy from non-renewable sources. The Town and County will lead by example and encourage reductions in energy demand and the use of renewable energy sources. However, it is the daily responsibility of the entire community to reduce consumption of non-renewable energy whether for climate, financial or other reasons.”¹

“Using solar, wind, geothermal, and/or hydro energy that has less impact to the climate is the community’s preference. The community will work with local utilities and other agencies, nonprofits, and businesses to identify local renewable energy generation opportunities so that it is not necessary to add non-renewable energy sources to the community’s energy portfolio. Integration of renewable energy into the community’s energy portfolio should be done consistently with the community’s Vision.”²

“Production of energy from renewable sources on individual properties should be allowed and encouraged. The transmission of electricity is extremely inefficient. Reducing that component of our energy infrastructure could result in a large cumulative decrease in demand for non-renewable energy. Exemptions to Town and County regulations should be considered to facilitate the installation of on-

¹ Jackson/Teton County Comprehensive Plan- Principle 2.1— Reduce consumption of non-renewable energy

² Jackson/Teton County Comprehensive Plan- Policy 2.1.c-- Increase local use and generation of renewable energy

site renewable energy sources. The community will also explore incentives for on-site renewable energy, utilizing best available practices.”³

STRATEGIES AND RECOMMENDATIONS

1. Moving ahead into the future, the Town should continue to seek self-supporting energy sources, not only from the abovementioned hydroelectric project, but also solar power and/or ground source heat generated power.
2. As we head towards 2020 and beyond, the Town should strive to keep its energy usage at or below the levels produced by the Strawberry Creek Project if at all possible. Doing so will reduce our dependence on other less clean energy sources and in turn make our community a cleaner, healthier place to live, work, and play.
3. Many strategies and recommendations listed in other 40 x 20 goals directly relate to energy derived from renewable sources. By implementing other specific strategies and recommendations utilizing renewable energy sources, sustainability efforts are compounded.
4. Continue a strong and effective relationship with Lower Valley Energy and other local organizations and look for opportunities to extend relationships with other entities on a regional basis.
5. Conduct an audit of energy sources and their long term viability.

³Jackson/Teton County Comprehensive Plan- Policy 2.1.d-- Allow and encourage onsite renewable energy generation

40 x 20 Data Tracking

The 40 x 20 Data Tracking Team is tasked to record monthly energy use data accurately, timely and completely for all areas of the Town of Jackson 40 x 20 Initiative. The team monitors and reports on progress towards achieving of our overall efficiency even if it's (+/-) for each of our stated goals by June 30, 2020.

INTRODUCTION

The Data Tracking Team created and completed an Excel data tracking inventory workbook for each goal starting at fiscal year 2006 (*July 1st, 2005 through June 30th, 2006*). This data inventory now serves as the baseline against which we will measure progress toward meeting the 40x20 goals of energy efficiency on behalf of the Town of Jackson to be 40 percent more energy efficient by June 30, 2020 in each targeted goal. The Data Tracking Team will next enter the completed water consumption data and additional data as it becomes available relating to other 40 x 20 goals.

Moving forward, the 40 x 20 data tracking program will continue to monitor conservation and efficiency targets: energy, fuel, waste stream diversion, water production and wastewater treatment in addition greenhouse gas emissions. This is an effort to target areas to strategically develop projects and programs that most cost effectively improves efficiency and consumption reductions.

BASELINE

Our current data tracking shows the following progress (+/-) of our stated goals to date:

Town of Jackson - 40x20 Goals:	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
1) Town Facilities 40% more energy efficient	<u>85,371</u>	<u>87,496</u>	<u>82,740</u>	<u>71,897</u>	<u>70,883</u>	<u>62,520</u>	<u>66,325</u>	<u>67,201</u>
% of FY06	100.00%	102.49%	96.92%	84.22%	83.03%	73.23%	77.69%	78.72%
2) Town vehicles and equipment 40% more fuel efficient	<u>10.28</u>	<u>11.23</u>	<u>12.41</u>	<u>13.33</u>	<u>12.68</u>	<u>13.19</u>	<u>13.22</u>	<u>12.66</u>
% of FY06	100.00%	109.15%	120.68%	129.62%	123.31%	128.25%	128.58%	123.11%
3) We will be 40% more efficient with water consumption					<u>7,259.79</u>	<u>6,657.21</u>	<u>5,325.06</u>	<u>8,184.94</u>
% of FY10					100.00%	91.70%	73.35%	112.74%
4) We will produce 50% less trash waste								
% of FY13								
5) We will be 40% more energy efficient in producing water	<u>7.29</u>	<u>7.04</u>	<u>7.89</u>	<u>7.71</u>	<u>7.81</u>	<u>7.32</u>	<u>7.93</u>	<u>7.68</u>
% of FY06	100.00%	96.51%	108.29%	105.73%	107.14%	100.39%	108.72%	105.34%
6) We will be 40% more energy efficient per gal. of wastewater	<u>31.22</u>	<u>28.13</u>	<u>27.17</u>	<u>26.42</u>	<u>33.72</u>	<u>33.14</u>	<u>21.43</u>	<u>27.54</u>
% of FY06	100.00%	90.12%	87.05%	84.62%	108.01%	106.18%	68.64%	88.23%

In November of 2006, the Data Tracking Team began experimenting with various data collection systems. The first version of energy/emission data reports was created and produced by the Town of Jackson Engineering team in an Excel format. In 2007, the information was then entered into the Clean Air and Climate Protection (CACP) program as recommended by ICLEI – Local Government. In 2008, the team converted to an Excel based “Energy Tracker” program which was ultimately adopted as the preferred method for data collection through December 31st 2010.

Three energy tracker workbooks were then created, which corresponded with the Town of Jackson and Teton County Functional Organizations, Town of Jackson Energy Tracker, Joint Town/County Energy Tracker and Teton County Energy Tracker. The data tracking team realized that the baseline data needed to be adjusted to ensure accurate reporting. Accordingly, all historical data has been adjusted as follows:

- Missing energy data: Energy data for the employee commute sector was not tracked in a way that would allow for relevant year over year comparisons. This sector was removed. Other data concerning waste generation was not tracked in detail after 2006. In order to provide an equal comparison of total energy greenhouse gas emissions, the Waste Sector was removed.
- Weather normalization: The extreme temperature shifts and variable snowfall rates experienced in the Jackson Hole region play a big role in the energy consumption. More natural gas is used when temperatures are lower to heat the buildings, many utility companies, such as Lower Valley Energy, use weather normalization to provide accurate and fair comparisons year over year. If these adjustments had not been made, energy efficiency accomplishments would be masked in colder than normal years or overestimated in warmer than normal years.

The 10 x 10 Initiative was a consumption based goal to reduce all electricity & all fossil fuel use by 10% by December 31, 2010. The 10 x 10 Initiative was created on a calendar year (*January 1st 2006 through December 31st, 2010*) basis. As we discovered the need to weather normalize we also discovered the need to normalize for service and facility expansion and contraction to provide a fair and accurate comparison from year to the next. The team will use an “Energy Efficiency” monitoring strategy go forward, which shows total energy used per square foot on applicable 40 x 20 goals. This will allow services to expand and/or contract and still compare the efficiency of operations fairly over many years.

The 40 x 20 data tracking workbook is an Excel based program which is setup to track each of the goals. These goals have several different methods for measuring progress towards the stated objectives. As such, we will either apply an energy efficiency or consumption metric to each goal as applicable or a combination of both.

STRATEGIES

1. Continue to record monthly energy use data accurately, timely and completely for all areas of the Town of Jackson’s 40 x 20 efforts. Accurate and timely inputs are critical so that the information can be used to communicate, help educate and inspire employees. A clear set of reporting expectations from the Elected’s and staff are extremely helpful for the data tracking team, e.g. how often and in what format would you like information?
2. Use current data available to 1) inform Council and staff on progress to date as a means to help all understood and to inform strategic decisions on how best to move, 2) to influence and inspire organizational behavioral change, 3) celebrate successes and achievements and 4) find the areas we are lagging and need to improve overall efficiency.

RECONMMENDATIONS

1. In the short term, continue data tracking business as usual by loading monthly energy usage information.
2. Load additional data as it becomes available relating to all 40 x 20 goals and continue progress.
3. Long range planning we should continue to look at best practices data tracking programs and when time and funding allow find a more user friendly data tracking program and/or service to help staff with these duties and to replace our current program.

40 X 20 COMMUNICATIONS PLAN

PURPOSE

The purpose of the Communications Action Goal is to develop specific tools for communicating and educating Town employees and the public about the 40 x 20 Initiative including efficiency measures, conservation, budgetary impacts, the environment and its connection to our economy, and individual consumption.

STRATEGIES

1. Share with Town employees the issues related to the 40 X 20 Initiative, financial savings and environmental protection in a way that engages and inspires them to make positive personal choices around these topics.
2. Communicate to Town employees the significance of the 40 X 20 Initiative and their roles in achieving its goals.
3. Communicate the programs, challenges, and successes of Town efficiency projects to a broad audience.

SHORT-TERM RECOMMENDATIONS: 0 TO 6 MONTHS

Where used, the \$ symbol indicates that future costs may be associated and will be presented to Town Council at the appropriate time for approval.

1. Continue to engage in outreach and education activities with other communities and organizations.
2. Create and utilize 40 x 20 brand when referring to the Initiative. \$
3. Implement a 40 x 20 guide for all new employees: history, goals and habits.
4. Implement monthly or bi-weekly updates for supervisors and managers to disseminate new information to teams.
5. Include efficiency training in Town employee orientation: recycling, waste management, water and fuel efficiency, and overall 40 x 20 efforts.

LONG-TERM RECOMMENDATIONS: BEYOND 6 MONTHS

1. Continue to engage in outreach and education activities with other communities.
2. Managers communicate with employees to develop an awareness of methods for optimizing and capturing necessary data and maximizing efficiency. Managers should also engage in continuous evaluations of related work practices.

CONCLUSION: IMPLEMENTING THE 40 x 20 INITIATIVE

INTRODUCTION

Determining a feasible way to implement the 40 x 20 Action Plan is imperative to the success of the 40 x 20 Initiative. There are several options to move the Initiative forward with varying levels of staff and fiscal impact. Options include creating another taskforce comprised of Town employees, assigning specific tasks outlined in the Action Plan to specific departments and department directors, and hiring a position tasked specifically with implementing the Initiative.

Option A: Creating Another Taskforce Comprised of Town Employees:

- **Pros:** The potential for employee engagement is high, cross departmental interaction and communication is increased, and employees are encouraged to think outside the box.
- **Cons:** Most employees are not involved in the budget process and, as such, bringing forward requests to Council including project design, planning, review, and requests for funding may be a challenge with regard to organizational communication and complete information. Most employees do not have experience with grants or in the marketing field, and maintaining momentum with regard to implementation may be a challenge.
- **Impact:** High staff impact, lower fiscal impact.
- **Alternatives:** A councilmember(s) and/or a sr. staff member(s) could be added to the taskforce.

Option B: Assigning Specific Tasks Outlined in the Action Plan to Departments and Department Directors:

- **Pros:** Department directors are involved in the budget process and hold experience in presenting items to Council including project design, planning, review and requests for funding. Implementation momentum would be maintained as specific departments would be held accountable to task completion.
- **Cons:** Department directors may not hold marketing experience, and organizational employee involvement is lower.
- **Impact:** High staff impact, lower fiscal impact.
- **Alternatives:** Department directors may assign tasks to employees or small cross departmental teams as they deem appropriate to increase employee involvement and cross departmental interaction and communication.

Option C: Hiring a New Position Tasked with Implementing the Initiative:

- **Pros:** An employee hired with a skill set that directly relates to the Initiative will have a high level of experience in sustainability and likely with grant applications and management. Further, a high level of momentum and accountability will be maintained.
- **Cons:** The employee may not have marketing experience.
- **Impact:** At this time, due to the associated high fiscal impact this is likely not a feasible option. It may be an option in the future.
- **Alternatives:** Hire a consultant on an as needed/where needed basis.

STRATEGIES

1. Conduct continual data analysis for each goal on a regular basis to assess if efficiencies are being gained and progress made.

SHORT-TERM RECOMMENDATIONS: 0 TO 6 MONTHS

1. Assign tasks from the Action Plan to specific Town departments and department directors to carry forward and implement.
 - a. Department directors meet to determine task priority and assign a related timeline.
 - b. Involve staff so that the Town of Jackson as an organization maintains a high level of involvement at all levels.
 - c. Efficiency efforts with regard to the Initiative be included as a standard part of senior staff meetings, departmental staff meetings, and Town wide meetings.
2. Create an action team of Town employees at all levels within the organization to implement the communication components of the Initiative.
3. Coordinate with other entities with similar missions such as the Jackson Hole Energy Sustainability Project.
4. The 40 x 20 Venture Team had budget \$2,500 to complete the Action Plan. Any remaining funds should be carried forward toward implementing the Action Plan.
5. Search for areas where the community could be involved and volunteers utilized.
6. Hire an intern to assist in implementing the 40 x 20 Initiative in any capacity.

LONG-TERM RECOMMENDATIONS: BEYOND 6 MONTHS

1. After one year, assess progress to date with regard to task completion and determine if any strategic changes need to be made to carry the Initiative forward.
 - a. Report progress to date and any recommended changes to Council.

APPENDIX

PRINCIPLES

The Town of Jackson is committed to being fiscal and environmental stewards, as demonstrated by their joint adoption of the 10 x 10 Action Plan and with its new 40 x 20 goal to improve the energy efficiency of Town's operations 40%, from our FY2006 baseline year, by June 30th, 2020. As a significant component of improving energy efficiency, the town and county are committed to improving fleet fuel efficiency and reducing transportation related energy use by our employees while also reducing emissions. The ultimate goal is to reduce costs and reduce environmental impacts, whenever possible.

PRACTICES AND PROCEDURES

For Town Personnel:

1. It is against state law to leave an unoccupied vehicle idling. Idling is prohibited in Town vehicles, with the following exceptions:
 - a. START Buses Startup and Shut down procedures
 - Per manufactures recommendations or
 - Per departments operating procedures
 - Until a bus reaches adequate air pressure and 120°, plus an additional 5 minutes of idle time;
 - While actively loading or unloading passengers.
 - b. All other Town vehicles Startup and Shut down procedures
 - Per manufactures recommendations or
 - Per departments operating procedures
 - Only when necessary to safely perform the need and function of the work task at hand.
2. Employees shall utilize efficient vehicle operating techniques. Training shall be provided to all new Town employees with periodic refresher courses. Incentive programs that encourage fuel-efficient driving, both on and off the job, will be developed and offered to implement this principle.
3. Fleet vehicle trips shall be reduced or consolidated whenever possible. In addition, alternative forms of transportation, such as bicycles, walking, and START, shall be encouraged and incentive programs implemented, such as reimbursement for START bus commuter passes.
4. Vehicle maintenance is a shared responsibility of each person utilizing a fleet vehicle; including checking for appropriate tire pressure, adhering to establish maintenance schedules, reporting any potential operating concerns, and utilizing technologies and supplies that increase fuel efficiency and/or decrease emissions.

For Supervisors and Managers:

1. Supervisors shall work with employees to develop an awareness of methods for optimizing work related trips and routes to maximize efficiency, minimize vehicle use and also engage in continuous evaluations of related work practices.
2. All vehicles purchased, leased, or otherwise obtained by the Town of Jackson shall be the most energy efficient, lowest emission vehicle possible, taking into account the functional and operational needs for which the vehicle is intended. A lifecycle cost analysis should be performed prior to choosing a vehicle by using the 'Vehicle Solutions' tab of the 'Jackson Energy Tracker.' The following considerations should be included in decision making:
 - a) Higher miles per gallon
 - b) Lower emissions
 - c) Minimum size and/or load rating needed for the task
 - d) Alternative power sources, such as electric, CNG, biofuels, and propane
 - e) Conditions under which the vehicle will be used
 - f) Price of the vehicle vs. life cycle cost.
3. When assessing the need to replace an existing vehicle, the following criteria shall be considered in the lifecycle analysis:
 - a) Current fuel usage versus the fuel efficiency of a replacement
 - b) Repair and maintenance history to determine if it is excessive
 - c) Return on investment when compared to a replacement
 - d) Compatibility with the current task to which it is assigned
 - e) Mileage
 - f) Price of a replacement vehicle
4. Supervisors shall facilitate training in vehicle efficiencies and driving practices for their staff and themselves.
5. Supervisors shall consult with their staff, the Fleet and Fuel Action Team and others who are working to develop programs for town and county employees in order to integrate alternatives to single occupancy vehicle travel into individual routines and to create new 'standard practice' and mobility for town and county employees.
6. Monthly and/or quarterly meetings shall be held to monitor and review all departments' progress towards 40x20 goals with the most current real time data. Also discuss next steps in moving towards accomplishing 40x20 goals and beyond.

For Town Manager and Town Council Decision-Makers:

1. Infrastructure that enhances options for the utilization of cleaner, renewable fuels, such as storage tanks and dispensers for biofuels or CNG, plug-in capabilities or car sharing program shall be planned for and funded to meet the goal of 40 x 20 and increasing our Btu/fuel efficiency by June 30th 2020 and beyond.

2. Infrastructure that supports storage of regularly used fleet vehicles shall be developed to reduce the need for idling vehicles and improve vehicle life, especially in cold weather.
3. Vehicle life cycle analysis shall be required for all departmental, fleet related, budget requests.

VEHICLE TRIP REDUCTION STRATEGIES

- ☐ Employee communication and education on vehicle trip reduction opportunities, including a real time calendar listing who's going where, at what time, etc.
- ☐ Encourage teleconferencing for meeting when applicable and invest in the necessary equipment.
- ☐ Provide showers and lockers for employees who walk, jog or cycle to work.
- ☐ Provide and maintain municipal fleet bikes for employees to use for work-related trips.
- ☐ Provide cash and/or public [transit passes](#) instead of free parking as an employee benefit.
- ☐ Establish 'transit mentors' as resources for new riders.
- ☐ Provide a shuttle service to public transit stops if necessary.
- ☐ Establish a car pool or ride-sharing network (community wide) to facilitate and encourage use.
- ☐ Provide preferential parking for car pools and high efficiency vehicles.
- ☐ Provide a guaranteed ride home policy for employees who took alternative modes of transportation.
- ☐ Allow telecommuting options and flexible working hours, such as '9/80' – allowing employees to work 80 hours within 9 working days, eliminating at least one trip every two weeks.
- ☐ Consider a car sharing program for the region or municipality.
- ☐ Encourage better scheduling/planning to reduce vehicle miles.

FUEL EFFICIENT DRIVING STRATEGIES

Drive Sensibly

Aggressive driving (speeding, rapid acceleration and braking) wastes gas. It can lower your gas mileage by 33 percent at highway speeds and by 5 percent around town. Sensible driving is also safer for you and others, so you may save more than gas money.

Drive in the highest gear you can, at the lowest possible speed. The slower your engine turns, the less gas you use. Don't accelerate when driving uphill — it makes your mileage per gallon plummet. Instead, try to drive at the same speed, or even a little slower.

Try to brake less by anticipating stops. When you brake, you waste the acceleration you've already used. Instead, try to accelerate slowly when leaving a stoplight and then coast to the next light.

Fuel Economy Benefit:	5-33%
Equivalent Gasoline Savings:	\$0.20-\$1.35/gallon

Use Cruise Control and Overdrive Gears

Using cruise control on the highway helps you maintain a constant speed and, in most cases, will save gas. When you use overdrive gearing, your car's engine speed goes down. This saves gas and reduces engine wear.

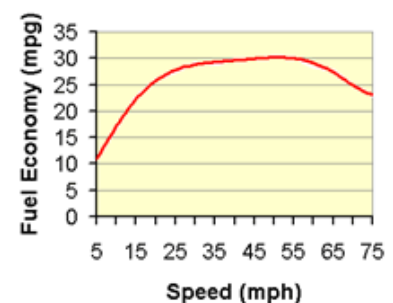
Maintain Your Vehicle

Keeping up with routine car maintenance can help your fuel efficiency. Be sure your tire pressure is at the recommended PSI according to manufacturer's specifications. Change your air filter regularly. A properly functioning car will result in better gas mileage.

Observe the Speed Limit

While each vehicle reaches its optimal fuel economy at a different speed (or range of speeds), gas mileage usually decreases rapidly at speeds above 60 mph.

For every mile you drive above 55 mph, your fuel economy drops by 2 percent. You can assume that each 5 mph you drive over 60 mph is like paying an additional \$0.30 per gallon for gas.



Fuel Economy Benefit:	7-23%
Equivalent Gasoline Savings:	\$0.29-\$0.94/gallon

Remove Excess Weight

Avoid keeping unnecessary items in your vehicle, especially heavy ones. An extra 100 pounds in your vehicle could reduce your MPG by up to 2%. The reduction is based on the percentage of extra weight relative to the vehicle's weight and affects smaller vehicles more than larger ones.

Remove your car's luggage rack, roof rack and related outdoor gear and put it away until you actually need to use it. The drag created from this gear can reduce your mileage per gallon by up to 5 percent.

Fuel Economy Benefit:	1-2%/100 lbs
Equivalent Gasoline Savings:	\$0.04-\$0.08/gallon

Avoid Excessive Idling

> **Turn off you ignition if you're waiting more than 10 seconds.** Contrary to popular belief, restarting your car does not burn more fuel than leaving it idling. In fact, idling for just 10 seconds wastes more gas than restarting the engine.

> **Warm up your engine by driving it, not by idling.** Today's electronic engines do not need to warm up, even in winter. The best way to warm the engine is by easing into your drive and avoiding excessive engine revving. After just a few seconds, your vehicle is safe to drive. The vehicle's engine warms twice

as quickly when driven. A cold engine produces dirtier exhaust since the catalytic converter does not function properly when the car is idling.

> **Warm up the cabin interior by driving, not idling.** Easing into your drive is also the best way to get your vehicle's heating system delivering warmer air faster. Sitting in an idling car means you are breathing in more of the exhaust that leaks into the car cabin. Any warmth you may get from a car heater is not worth the damage to your health. If parked and waiting, it is healthier to get out of your car and go inside a store or building.

> **Protect your car engine by idling less.** Frequent restarts are no longer hard on a car's engine and battery. The added wear is much less costly than the cost of fuel saved. Worse, an idling engine is not operating at peak temperature, which causes fuel residue to condense on engine cylinder walls and leads to damage.