Energy Chapter

York Comprehensive Plan Inventory & Analysis

Adopted: November 7, 2017

Prepared in conjunction with the York Energy Steering Committee

ENACTMENT BY THE LEGISLATIVE BODY

Date of Town vote to enact this Chapter of the Comprehensive Plan: November 7, 2017

Certified by the Town Clerk: Mary Anne Lyczewski (signature) **on** 11/7/2017 date

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1. Introduction

The Energy Chapter of York's Comprehensive Plan was developed by the Energy Steering Committee in collaboration with York's Town Planner, Dylan Smith, and the Planning Board. The Committee held meetings with a number of Town department heads, volunteer committee members, business owners, nonprofit directors and homeowners to develop the overall vision as well as the specific programs and policies in the Chapter.

We are guided by the United Nations vision laid out in *Our Common Future*, the 1987 Bruntland Commission Report on the Environment and Development: [b]

> "Sustainable solutions meet the needs of the present without compromising the ability of future generations to meet their own needs."

It's helpful to remind ourselves why we are fashioning these plans. As the Bruntland Commission found and the Mayor's Climate Protection Act and the 2015 Paris Climate Conference (COP21) reinforced, there is an ever-greater urgency for a response to climate change, and we all must do our part if we are to hand on to our children and their children a world that will meet their needs.

Our vision is for a community where net-zero energy and sustainability are not the results of a particular initiative, but the catalyst for a vigorous economy that supports a system of healthy natural resources shared by all. Where economic and environmental costs are not unfortunate outcomes of our lifestyles, but reasons to do things differently. Where excuses are ignored and action is taken.

Where:

- York Town government uses no more energy than it makes ("net-zero") and greenhouse gas emissions are reduced to nearly zero
- We get 100% of our energy for both electricity and heat from renewable resources
- The Town's growth plan accommodates diverse lifestyles such as co-housing, tiny houses, multi-family housing and a significant affordable housing component for the most vulnerable
- Access to clean energy and efficient technology is available not only to those who can afford to pay for it but also for those who need help
- Building codes call for sustainable and efficient buildings and ordinances support lighting that keeps the skies dark and the stars clearly visible
- The Town fleet is made up largely of hybrids or electric vehicles
- Electric charging stations are convenient and plentiful for Town employees and residents

- Public transportation, car-sharing and ride programs are available to citizens and are linked to regional systems
- Bike paths are so safe and convenient that a large part of the population bikes to work
- Plentiful food sources are scattered through the community and organic farmers are actively supported by Town policy and popular markets
- Waste is recycled to energy and mulch
- Clean water sources are assured and stormwater is managed with collection and drainage systems rewarded by Town policy
- York's brand as a diverse green economy attracts businesses and tourists and is a major contributor to economic well-being
- York government actively supports sustainable policy and assigns appropriate resources to it in both dollars and staff time.

The goal of this inaugural Energy Chapter is to launch our plan to get to 100% sustainability.

The purpose of the Energy Chapter is to build a framework for York's sustainability initiatives so we can measure, monitor and communicate our progress toward our goals. The plan encompasses both municipal operations and the community at large and will help us integrate plans in every facet of Town management and community life, in each of our day-to-day work and activities.

The process is not linear – we are already doing some of the steps below, and will do others simultaneously. But a systematic program of advancing sustainability for York includes the following essential elements:

- Establish a vision and strategic goals with action plans for each goal
- Identify and rank opportunities in short-term and longer-term priorities
- Develop action plans and a process to monitor
- Implement initiatives and monitor performance
- Communicate to the community progress and lessons learned

2. York Energy Initiatives – History and Accomplishments to Date

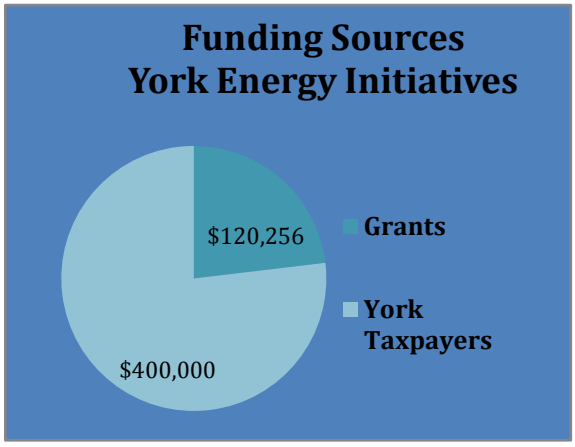
Short history of York's progress toward sustainability

2006	York Energy Efficiency Citizen Committee is launched ("York Goes Green")
2008	Voters approved Green Buildings zoning ordinance adopting LEED standards for new Town buildings, making green building a priority for York
2008	York signed US Mayors' Climate Protection Agreement and became member of ICLE, Local Governments for Sustainability, an international association of local and regional governments dedicated to sustainable growth
2009	Energy Steering Committee appointed by Board of Selectmen
2011	York added Sustainability Goal 1.4.1 to Comprehensive Plan
2010 – 2015	Voters approved total of $400,000 and York received grants of $120,255 to fund energy initiatives plus rebates of $11,160 that were returned to the general fund. Building energy improvements of $351,660 were completed in the Town Hall, Fire Stations, Grant House and Police Station. The $157,311 Beach Fire Station solar array and building retrofit was completed in June 2015 and serves as a model of how to retain a building's historic appearance while expanding its function and greatly improving its energy efficiency.[c] The final project funded by voters was an upgrade of lights to LEDs in five Town buildings, totaling $24,231 and exhausting the balance in the voters' ballot initiatives.
2016	"Keep York Warm" low-income weatherization program was launched in collaboration with York Community Services Association, Habitat For Humanity York County, Rotary International and Efficiency Maine. York's Energy Steering Committee coordinated the project, which was recognized for innovation by Efficiency Maine.
2017	York approved converting its streetlights to LEDs.

In 2008, after several years of efforts to engage the Town in planning for energy initiatives, the Board of Selectmen approved the US Mayors' Climate Protection Agreement and sent to voters a Green-Building ordinance that had been developed by two high school students. At the same time, voters approved an ordinance that allows small wind turbines to be used on residential and municipal properties, with height and sound restrictions.

The next year, the Board formed the Energy Steering Committee (ESC), consisting of five members and two alternates, with the mission to identify opportunities for energy conservation and efficiency upgrades in Town buildings. Proposed projects require the approval of the Board of Selectmen.

In 2010, York voters approved the first of four $100,000 appropriations for improvements in energy efficiency in town buildings – in 2010, 2011, 2012 and 2014. The ESC was charged with using this funding to recommend energy-efficiency projects. York also received several grants totaling $120,255, including a $94,758 grant for the York Beach Solar Array completed in the Fall of 2014, and Efficiency Maine rebates of $11,160 for the LED lights at the York Beach Fire Station and five other municipal buildings.



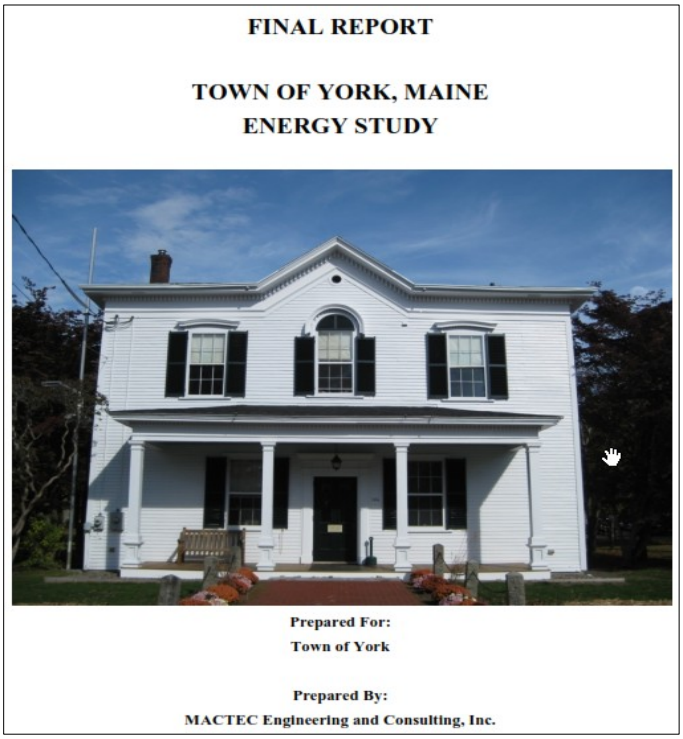
Light fixtures in several municipal buildings will be replaced with LEDs in 2016, which will deplete the remaining bond balance.

Figure X.1. Funding Sources – York Energy Initiatives, 2009-2015

Source and Approximate Date of Funding	Non-town Funds	Town Funds
Efficiency Maine seed grant - November 2009	$10,000	
SEI/Efficiency Maine matching grant for 2012 work	$15,498	
SEI Grant – July 2014	$94,758	
York Taxpayers – FY 2010-2014		$400,000
Total	$120,256	$400,000

Source: York Energy Steering Committee Presentation to Board of Selectmen, November 2014

One of the first things the ESC did was commission an energy study in 2011, partially funded by a $10,000 grant from Efficiency Maine. The Committee gathered energy use data from all municipal facilities as a baseline for measuring future improvements, and contracted with MacTec Engineering to identify priorities for cutting emissions, refining the list to 15 Town-owned buildings. The study formed the Committee's work plan for the next several years. The ESC developed specifications and solicited bids for each project and worked with department heads and contractors as projects were being completed.



Spending by project - York Energy Initiatives 2010 - 2016	
2010 Preliminary Energy Study, ICLEI Membership (grant funded $25,498)	$49,704
2010 – 2014 ICLEI membership, miscellaneous RFP advertising	$3,954
2013 5 Building upgrades	
Town Hall, Grant House, Police Station, Fire Stations	$27,750
2014 Village Fire Dept interior and exterior insulation	$176,968
2014 Grant House pellet boiler installed	$56,856
2015 Grant House Pellet Boiler installation errors corrected	$12,200
2014 Beach Fire Dept solar installation (Grant funded)	$94,758
2015 Beach Fire Dept building Retrofit (Not including YBFD funded insulation $12,300)	$62,553
2016 LED Building upgrades – Town Hall, Grant House, Senior Center, Town Garages	$24,231
Total Project Spending	**$508,971**

The first priority was to properly insulate and seal buildings so they would use less energy to heat. In 2013 small projects were completed in five Town buildings: Grant House, Police Station, Town Hall, Beach Fire Station and Village Fire Station. In 2014, a major retrofit was done to the York Village Fire Station. Also that year the Grant House needed to replace its non-functioning oil boiler, so the Energy Steering Committee recommended a pellet boiler for its compatibility with York's goal to reduce the use of fossil fuels and because of its superior life-cycle cost profile.

2012-2016 Building Energy Upgrades Completed

2011	Preliminary Energy Report from MacTec Engineering (partially grant-funded)
2012	Insulation and air-sealing in four buildings –
	Grant House attic and basement insulation
	Police Station attic and hot water pipe insulation
	Town Hall attic insulation and air-sealing
	York Beach Fire Station hot water pipe insulation
2013 - 14	York Village Fire Station interior and exterior insulation and siding, lighting upgrades,
	extensive weather-sealing, replaced rafters and ceiling, vent louvers and roof fans
2014 – 15	York Beach Fire Station solar panels installed, building retrofit completed June 2015
2015	Grant House pellet boiler installation corrected
2016	Lighting upgraded to LEDs throughout Town Hall, Grant House, Senior Center and both DPW Garages

York Police Station insulation

"We can now interview people in my office without our coats on."
Charles Szeniewski, Captain

In 2014 York had the opportunity to apply for a grant from funds originally from the federal stimulus program. The $94,758 grant paid for most of a solar panel installation on the York Beach Fire Station. To get the most from the panels, the Energy Steering Committee planned a retrofit to re-insulate and seal the building and replace the lighting with LEDs. This is a demonstration project that shows how a community can take a historic building, retain and improve its function and historic appearance and transform it into a high-performing, energy-efficient system.

Underway, if voters approve, is a plan to convert our streetlights to LEDs, drastically cutting CO2 emissions and cost. We are investigating a very large solar array on the Town landfill that would power the entire municipal complex and part of the schools, water and sewer departments. Also in the plans is a "Solarize York" program that would offer a bulk-purchase discount on solar installation for York residents and businesses; and workshops on participating in a "Solar Farm" as a way to buy solar power without putting panels on your roof, whether you own your home or rent.

York Village Fire Station insulation

"I had $5,000 left in my heating account budget at the end of last fiscal year." Chris Balentine, York Village Fire Chief (at end of June 2014)

In 2012, we made improvements to the first floor of the YVF station, which had only uninsulated cement block walls on the first floor. Two inches of closed-cell spray foam was applied to the exterior of the cement blocks and that was covered with matching vinyl siding.

In 2013, we installed 14 inches of additional attic insulation, vapor barriers with extensive air sealing, a new dropped ceiling on the second floor, roof vents, and high-efficiency replacement lighting fixtures. Additionally, it was necessary to perform various structural modifications to the roof of the building to bring it up to code.

York Beach Fire Station solar panels and interior renovation

In 2014 the Committee obtained a $94,758 grant from Seacoast Energy Initiative and Efficiency Maine for a 28.35 grid-tied solar array on the York Beach Fire Station roof. The Fire Department was planning to renovate the second floor Banquet Room, so the timing was right for an extensive retrofit of the building to use the solar power most efficiently.

Approximately $62,553 of the money York voters approved in 2014 plus $12,300 of Fire Station Foundation funds went to insulate the building, upgrade the heating and cooling system on the second floor, and install LED lighting throughout the building. York received a rebate from Efficiency Maine of $8,400 but the funds were returned to the General Fund and not credited to the cost of this project paid from the bond York voters approved. This comprehensive approach models how to convert a historic building to a high-performance energy system while retaining the building's function and historic appearance.

The work was completed in June 2015 and was celebrated at a "Solar Plug-In" ceremony that month.

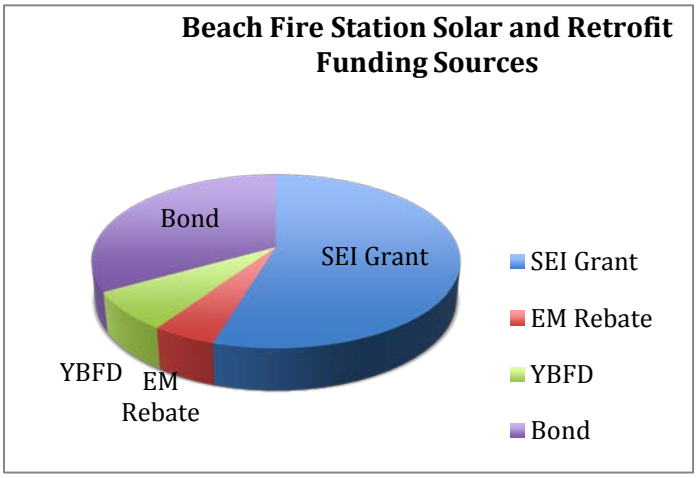
"My usual $350/month electricity bill dropped to a credit lf $1.22 in August 2015 – so now I'm helping pay Town Hall's electricity bill." Dave Bridges, York Beach Fire Chief

Performance expectations

Projected CO^2 reductions of 233 tons per year are the equivalent of:

Taking 49 cars off the road… *or*

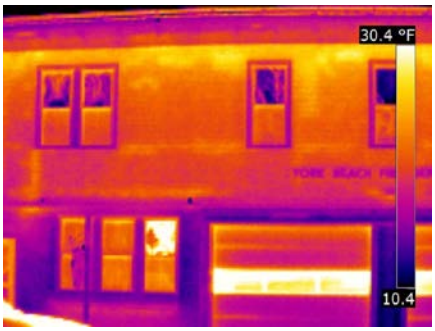
The CO2 scrubbing power of 233 acres of forest

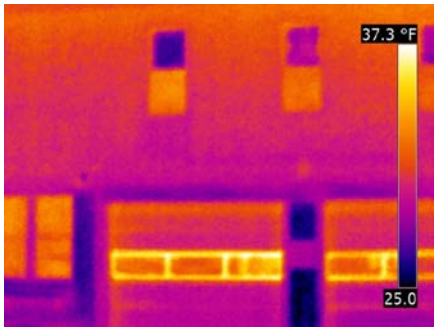


Insulation – Exterior Front

After insulation was installed in front walls: fewer light areas indicate less heat is escaping:

Before: **After:**

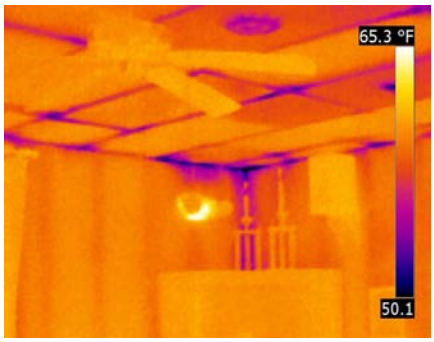


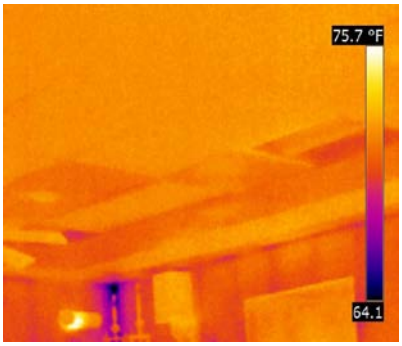


Insulation – Interior second floor ceiling

Insulation installed above ceiling created thermal barrier: room retained heat better and ceiling grid lines no longer visible.

Before: **After:**





Lighting – Second floor ceiling

Second floor ballroom ceiling was entirely removed and rebuilt with insulation, a ducted heat pump system that also provides air-conditioning, and new LED light fixtures.

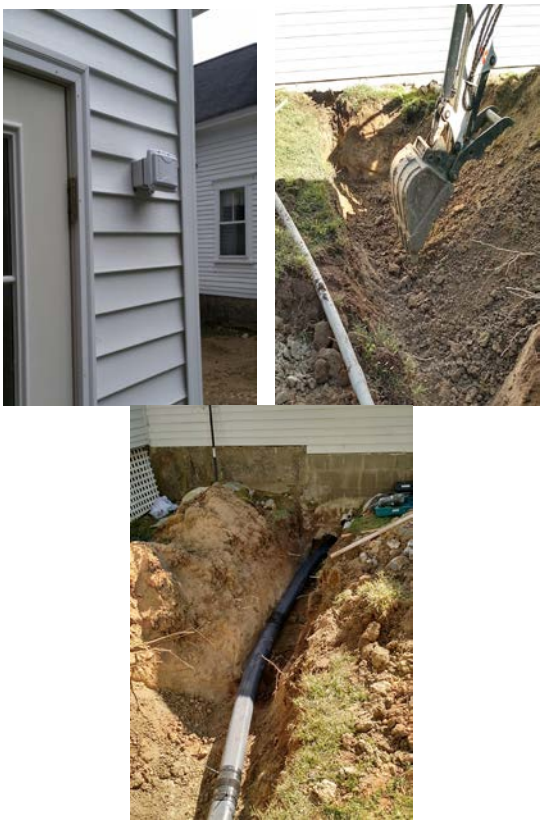
Before:

After:

Grant House Pellet Boiler Repair

In 2013, the Grant House needed to replace its non-functioning oil boiler. The Energy Steering Committee thoroughly researched pellet boiler technology recommended a pellet boiler because it is a carbon-neutral, renewable fuel source that is compatible with York's clean-energy goals, and with life-cycle cost advantages over oil and gas systems. Pellets milled from sustainable forests for space heating result in a significant net reduction in CO2 emissions. Sourced in Maine, they support the Maine economy and provide jobs to Maine people; and prices are not affected by world energy markets. The Committee consulted with the Kittery Wastewater Services director about its larger pellet boiler and heard that it was operating very effectively and had saved thousands of dollars each year.

After one cold season, however, it was clear that the pellet boiler was not functioning at the Grant House. An examination of the system revealed a number of problems, not with the boiler itself but the installation – the snow on the path where the pipes ran from the boiler outbuilding to the Grant House itself was completely melted when snow around it was 4 feet deep. The Energy Committee obtained approval from a skeptical Board of Selectmen to repair rather than replace the pellet boiler. The original installer had retired and was unavailable to repair the boiler, but the Committee found a Maine company that completed the repair in September of 2015 at a cost of $12,200. That company maintains the system today. In addition to the reduced CO2 emissions, expected savings over the life of the boiler is $136,173. And how is it working?



"The pellet boiler has worked flawlessly. While overall the winter has been relatively mild we have had days of extreme cold allowing us to test the system under frigid conditions. The work done by Omni Heat has proven very effective and the decision to bring them in to correct deficiencies was the right choice. It is clear [usage is] well below last year and we anticipate a significant savings."

Mike Sullivan, Director, Parks and Recreation

LED Building Lighting Upgrades

In consultation with the Town Manager, the Public Works Director, and the Parks and Recreational Director, the Energy Steering Committee selected five municipal buildings to have most of their lighting upgraded to high-efficiency LED lamps. This project was funded by the last of four $100,000 sums the voters had approved for energy projects.

A thorough audit of all existing interior and exterior lights was conducted at the five facilities, the Town hired a project manager and an RFP process selected Affinity Lighting of Dover NH to convert the lights [d].

Costs and Savings

	Investment Cost	10 Year Savings	Payback Yrs	10 Year ROI	Annual Tons CO2 Emissions Reduction	Acres of forest scrubbing Equivalent
LED Lighting Upgrade	**$21,562**	**$61,430**	**3.6**	**185%**	**26**	**25**

- The project came in on time and under budget, even with a few extras.
- Total project cost was $24,321. Projected incentives from Efficiency Maine of $2,760 will recover about 11% of that total, resulting in a net investment of $21,562.
- Annual savings in CMP energy costs (assuming 13¢/kWh fixed) are estimated at $6,143/year, for a Simple Payback of 42.1 months and a 10 Year Cumulative ROI of $39,867 or 185%.
- Estimated total energy savings is 42,793 kWh annually, reducing CO^2 emissions by some 26.1 tons/year – the carbon sequestered by 25 acres of US forests.

New T5 LED lamps in the DPW Main Garage

"I'm excited about the new LED lights in the two town garages. We've tried to get more light in those buildings for years – put in more windows, even new fluorescent tubes a few years ago – but these lights really improved the work environment for our crew."

Dean Lessard, Director, Department of Public works

Keep York Warm Low-Income Weatherization Program

The Energy Steering Committee initiated a unique collaboration in the fall of 2016 that was aimed at providing in-depth energy efficiency improvements to households that would not otherwise afford them.

The Committee enlisted the York Community Services Association (YCSA) as a liaison with the families to be served and Habitat for Humanity York County to build on the weatherization work they do in York County. Together they appealed to York Rotary, which provided a $7,000 initial grant that was multiplied many times by Efficiency Maine's Low Income Home Energy Savings Program (LIHESP). The group partnered with two energy efficiency companies to perform energy audits and install energy efficiency improvements to homes in York.

At this writing, professional energy audits have been performed on 11 homes and efficiency updates are underway on such items as custom-make window inserts (built by Rotary and other volunteers), air-sealing, LED bulb replacements, low-flow faucets and showerhead replacements, and in some homes, insulation upgrades. Audits unearthed high levels of carbon monoxide in many homes from a poor heating system or leaky ducts. The group received an additional $300 from the York Rotary Club to supply carbon monoxide monitors for all the homes.

More than 20 volunteers from Rotary, the Energy Steering Committee, local churches and other organizations worked alongside professionals in each stage of the work, and the Rotary Interact Club of high school students also helped build more than 60 window inserts.

Helping families who rent, rather than own, their homes is more difficult because available programs don't apply to renters. Window inserts have been provided but the team wanted to assess how to address larger issues. A meeting is planned in May to introduce landlords to Efficiency Maine's program for multi-unit buildings. The goal is to increase awareness of the resources available that would provide to both building owners and their tenants the mutual benefits of making energy efficiency building improvements.

The ***Keep York Warm*** program was recognized for its innovation at Efficiency Maine's annual symposium in January. Habitat for Humanity York County has not collaborated in

this way before, but would like to apply what they've learned throughout York County by intensifying the efficiency improvements they offer, and working with professional energy auditors and Efficiency Maine.

A final report will be completed in the summer of 2017.

LED Streetlight Conversion

The Energy Steering Committee first recommended that York convert its streetlights to LEDs in 2014, soon after the requirement to lease streetlights from CMP was swept away by state legislation in 2013.

The Committee researched the benefits and the process of performing a streetlight conversion, and familiarized York officials with the potential for reductions in carbon emissions as well as costs. In June of 2015 the York Board of Selectmen agreed to move forward with a turnkey approach that would hire one firm to do the whole project – inventory, design, installation and potentially maintenance – and to hire Celtic Energy LLC as an expert consultant to help with the process.

Celtic Energy held information workshops with town officials and the public and analyzed the PUC rule-making that set the terms for towns to acquire their lights from CMP and convert them to LEDs.

It took the PUC until October of 2015 to finalize the rules, and that month the Board of Selectmen confirmed their decision to pursue a turnkey installation project. In May 2016 voters approved the capital plan and a contingency budget in case York decided to cancel the project after the initial design phase.

While negotiations continued by a group of four Maine towns (called the Municipal Streetlight Group) over certain details that would affect municipalities' costs, four Maine towns – Falmouth, South Portland, Rockland and Biddeford – joined together to issue an RFQ, and selected RealTerm Energy as the vendor who would install their turnkey streetlight project. RealTerm agreed to extend substantially the same terms to other Maine towns and held a workshop attended by the Energy Steering Committee and Dean Lessard, DPW Director.

In February 2017, the Energy Steering Committee and Dean Lessard recommended that York avoid duplicating the RFQ process the other towns had already undertaken and hire RealTerm Energy to replace our streetlights with LEDs in a turnkey approach; and to pay for the project with tax-exempt lease financing (TELF), which was reviewed and approved by York's Finance Manager and Bond Counsel.

In April 2017 the York Board of Selectmen approved proceeding with the project and the financing. The project is anticipated to be finished in the fall of 2017, with an interim decision to proceed or not after a test installation in the summer.

Anticipated Timeline

April 2017	RealTerm approved
June 2017	Investment-grade audit and photometric design
July 2017	Test pilot installation
July 2017	Public process to review design
August 2017	BOS second decision point on whether to proceed
August 2017	Schedule and project milestones established
September 2017	Fixture procurement and installation
November 2017	Installation complete – including GIS inventory map of lights

Costs and benefits projected by RealTerm Energy's March 2017 proposal are summarized below.

LED Streetlight Project Summary

April 24, 2017

This is a summary of the RealTerm proposal dated 3/29/2017

Summary	
Scope	821 lights (to be confirmed in IGA)
Technology	Smart-ready LED fixtures
Color temperature	3,000K to 4,000K
Average life	> 100,000 hours (20 years)
Fixture warrantee:	10 years
Estimated project cost:	$519,759
Estimated payback	3.9 years
ROI	17.9%
Method of financing: quote*	Tax Exempt Lease, 7-year term, 2.87% *Interest rate could change after May 3

Total project cost and maximum financing:	$519,759
RealTerm Energy	$348,079
CMP Fixture Acquisition (estimate)	$131,680
Celtic Energy	$40,000
(Including reimbursing the BOS contingency fund $25,000 for 2016 fees)	

Projected Impact	
Current Annual Electricity Costs	$140,781
After Upgrade	$17,633
Plus Annual Maintenance Costs	$6,568
Savings – First year	$116,580
Savings %	83%
Loan Payment (Flat semi-annual payments)	$82,489
Savings after Loan Payment, First Year	$34,091
(This is how much less than budget the streetlight spending will be)	

Annual Net Savings after paying 7-year Lease at 3%							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Savings	$116,580	$120,143	$123,815	$127,597	$131,495	$135,511	$139,649
Loan Pmt	$82,489	$82,489	$82,489	$82,489	$82,489	$82,489	$82,489
Net Savings	**$34,091**	**$37,654**	**$41,326**	**$45,108**	**$49,006**	**$53,022**	**$57,160**

3. Local, State, regional energy policies, programs, and incentives

State of Maine

- Efficiency Maine offers both funding and technical support
- Maine Downtown Center – Green Downtown Program
- Municipal Streetlight Coalition (Maine)
- Municipal Solar Coalition
- Southern Maine Regional Planning & Development Commission SMRPDC has been an important leader in securing funding and conducting work as part of the Sustain Southern Maine effort.
- Maine Municipal Association could be a resource if towns call for it
- State of Maine Comprehensive Energy Plan (2008-2009)

Other potential regional partners include but are not limited to the University of Southern Maine (USM), the York County Community College (YCCC), and the York County Community Services Program (CASP), which may be interested in working with the Town to cobble together support from CASP, and other groups to fill the gap to install weatherization, insulation, solar panels, etc. for low income homeowners.

Federal and Universal Programs/Organizations

- Clean Air, Cool Planet
- Environmental Funder's Network
- ICLEI (York is member)
- US Department of Energy
- US Department of Environmental Protection

4. Organizations, Stakeholders, and Community Engagement

These strategies are ambitious, but achievable, if the right resources are dedicated to the work. To be effective in reaching our goals, the Town and the ESC will need to engage many organizations and individuals in identifying and pursuing future energy strategies and initiatives.

York

The York Planning Department, given the nature of its expertise and responsibilities, is a natural leader in this effort.

Other important municipal departments at the center of the work are Public Works, Recreation, Police, Fire, School, Water and Sewer, and various building committees.

Local partners include York Dialogue, York Community Services Association, York Hospital's Green Team and York Goes Green.

Local employers include hotels and restaurants, the York Hospital, Stonewall Kitchen, Sentry Hill Congregate Care, and Starky Auto.

In May 2015, York Community Dialogue held a session to discuss York's Energy Future and their vision for a sustainable York as a way for citizens to say what they wanted to see in our strategy. The session surfaced a wide range of ideas and questions, many of which have been addressed in this Energy Chapter, summarized below. The full report of the session is available in the Appendix.

- General feeling we need a common definition of sustainability and shared objectives, and what it would mean for the steps York would need to take
- Sustainability includes food – access to good food, support for farmers and community gardens, compost; Parks & Rec could provide a garden program in summer day camp
- A proposed goal may be that each York household generates the energy they use (this is "net-zero")
- There was intense interest in what individuals can do – costs and incentives for making energy improvements, guidance on available programs and professionals to do the work
- Much support was expressed for solar and wind energy, tidal, wave and other technologies – a "buckshot" approach vs "silver bullet"
- Our elected officials at all levels should be committed to clean energy. Who is in charge of energy in York? Where does it come up in department reports?
- The Town's role should be to provide information, assistance and rewards for energy improvement – maybe a revolving loan fund or subsidies for energy audits, weatherization and insulation, an energy website with personal stories
- We should measure our energy use and how it changes as we make improvements – in the Town Annual Report, with tools for individuals to measure their use
- The schools should have programs on sustainability and energy

5. Goal and Actions

Introduction

In 2007, York made a commitment to the US Conference of Mayors Climate Protection Agreement to monitor and reduce our greenhouse gas emissions (GHG) by 7% below 1990 levels.

York's Comprehensive Plan Goal 1.4.1 calls for sustainability to inform policy and decisions and for clean energy to be promoted town-wide.

This plan presents the town of York with the opportunity to take control of its energy use, improve the town's economic and environmental resilience, and reduce the town's energy costs.

The goals and actions in this plan can be thought of as Phase 1. They are a limited number of high-value actions we can take in the short term that are feasible within the Town's current capabilities.

We also recommend a Phase 2 planning process that engages all of York's major constituencies in developing the goals and action items that will take the next step toward our vision of a Sustainable York.

To date, energy improvements have been initiated by a volunteer committee in collaboration with Town staff and funded by capital budgets. That approach has produced some good results but has limitations on how much can be accomplished, and has impeded York's ability to benchmark and monitor improvements.

It is time to begin incorporating energy and efficiency considerations in the day-to-day work of the Town, supported by operating as well as capital budgets where needed, including funding for staff support as appropriate, possibly funded in part with the savings produced by energy initiatives. Fostering an energy-efficiency culture takes time, but when we all are thinking routinely about how to improve our energy efficiency, our goals will be met as a simple outcome of doing our work well.

Most actions will take little or no money to implement; they mainly introduce a slightly different way to do the work we already do. Where there is a cost, it is often paid for from the savings realized in reducing our energy consumption, which reduce operating expenses. Costs vary with the kind of project, but payback periods can be as little as 3 or 4 years for projects like LED lighting. Solar projects see payback in 7 – 10 years (then power is effectively free for the remaining 20 to 40 year life of the solar panels). Insulation, air-sealing and other efficiency improvements can provide almost immediate paybacks; these are some of the most effective measures we can take because the unit of electricity that we don't use is the least costly one. In addition, financing options such as performance guarantee contracts offer towns a way to pay for upfront costs from the savings produced, without the need to issue a bond to raise the capital. Rebates may also be available to offset costs of efficiency projects and a grant may be possible if there is time to pursue it.

These observations underlie the specifics listed below – they are intended to help York take some actions that are compatible with our current resources while planning how to integrate the work in York's operating processes going forward.

Goal 1. Energy and Climate: Reduce greenhouse gas emissions (GHG) through energy efficiency projects, conservation measures and renewable energy initiatives in four categories.

Municipal Operations
Commercial/Business
Residential
Schools

Action 1 Incorporate energy efficiency and renewable energy awareness in planning, budgeting and day-to-day operations, including building construction projects. Through this awareness develop an understanding regarding funding options including bonds to tax-exempt leases, performance contracts and reinvest into future energy efficient programs from savings generated.

Action 2 Investigate the feasibility and advantages of upgrading building codes for new and renovated municipal facilities to the most current green building standards for energy efficiency and improved life-cycle operating costs. Evaluate and recommend the most appropriate standards such as LEED, IEC 2013, ASHRAE 90.1, Maine Advanced Building Standards and Massachusetts Stretch Building Code.

Action 3 Encourage all new and renovation construction of commercial, multi-family and single-family residential structures to meet nationally recognized and third-party verified green building standards. Investigate the potential of providing incentives in development regulations for projects that meet these standards.

Action 4 Explore the use of cost effective solar, biofuel and other renewable energy options for powering municipal buildings that would reduce the town's carbon emissions. Consider the pursuit of pilot programs where the goal is to demonstrate the cost effectiveness of a technologies not currently in use in York, and/or technologies that promise near term cost effectiveness.

Goal 2. Sustainable Transportation: Reduce the environmental impact of vehicles in York and create a safe environment for alternative transportation options.

Action 5 Develop a green-fleet policy that reduces fuel consumption and expands the use of alternative clean and low-carbon fuels where it can be shown to be cost-effective.

Action 6 Improve pedestrian and bicycle transit throughout town and encourage walkable neighborhoods with the goal of reducing car dependence for local activities.

Goal 3. Waste Reduction: Increase York's recycling rate through encouraging purposeful purchasing, reuse, recycling, and composting.

Action 7 Explore alternative waste management and recovery options to reduce the amount of community waste trucked to landfills or incinerators and to increase the ratio of curbside pickup of recyclable to non-recyclable materials.

Goal 4. Community Engagement: Develop collaborative partnerships that build support for community initiatives and increase awareness about sustainable programs, policies and practices.

Action 8 Collaborate with the School, Water and Sewer Districts on their energy efficiency goals.

Action 9 Facilitate the development of sustainable energy programs and curriculum within Town Schools that engages students and teachers through project based service-learning.

Action 10 Develop a body of knowledge or capability to increase awareness among York officials or citizens by holding solar home and business tours, energy fairs and information workshops for York's businesses, nonprofits and citizens.

Goal 5. Measuring and Communicating Progress: Establish clear milestones that are achievable and rewarded.

Action 11 Develop a benchmarking and monitoring process; evaluate EPA's Portfolio Manager, ICLEI's ClearPath and other monitoring systems for the best fit for York.

Action 12 Establish 5-year targets for emissions reductions compatible with York's commitment to the US Conference of Mayors Climate Protection Agreement (2007)

Appendix A: Summary of Actions

This table suggests the responsible groups for each strategy and indicates timeframes and potential costs (rough estimates). The table can be referenced in annual capital and budget planning, when departments and committees identify the projects they incorporate in their respective areas.

Action #	Description of Action	Responsible Groups	Timeframe (Priority)	Estimated Cost	Source of Funds
Goal 1.	**Energy and Climate**				
1	Include energy goals in municipal operations	BOS, ESC, TM	FY 2018 – 19 (Immediate)	$5,000	Savings
2	Investigate upgrading municipal building codes for new and renovated municipal buildings	CEO, PB	FY 2018 – 19 (Immediate)	$0	
3	Encourage green building standards in commercial and residential construction	BOS, CEO	FY 2019 – 20 (Immediate)	$0	
4	Explore current cost effective solar, biofuel and other renewable energy options that would reduce the town's carbon emissions	BOS, ESC	FY 2019 – 20 (Immediate)	$0	
Goal 2.	**Sustainable Transportation**				
5	Develop green fleet policy	BOS, ESC, TM	FY 2018 – 20 (Immediate)	$0	
6	Improve walking, biking, reduce auto dependence	PB, Bicycle & Pedestrian Committee	FY 2018 – 20 (Immediate)	unknown	
Goal 3.	**Waste Reduction**				
7	Explore options to reduce waste and increase recycling	BOS, DPW, ESC	FY 2018 – 20 (Immediate)	$0	
Goal 4.	**Community Engagement**				
8	Collaborate with School, Water, Sewer Districts	ESC, Schools, Water, Sewer	FY 2018 – 20 (Immediate)	$0	
9	Hold public workshops and solar home tours	ESC	FY 2018 – 19 (Immediate)	$0	
10	Facilitate the development of sustainable energy programs and curriculum within Town Schools	ESC	FY 2019 – 20 (Immediate)	$0	
Goal 5.	**Measure and Communicate Progress**				
11	Develop benchmarking system	ESC, TM	FY 2018 – 19 (Immediate)	$5,000	Op Budget
12	Establish 5 year GHG reduction targets (update York energy study)	BOS, ESC, PB, TM	FY 2019 – 20 (Immediate)	$25,000	Op Budget

Appendix B: Glossary, Notes, and References

1. References

a. "Beyond Paris Climate Change Talks," New York Times December 1 2015: http://www.nytimes.com/2015/12/01/science/beyond-paris-climate-change-talks.html?emc=edit_th_20151201&nl=todaysheadlines&nlid=67631843
b. UNECE Brundtland Commission and Sustainability: http://www.unece.org/oes/nutshell/2004-2005/focus_sustainable_development.html
c. Energy Committee/Finance/2016/"Sources, Uses Multi Year RP 4/25/17"
d. Energy Committee/LED Building Lighting Upgrades/Reports/"Final Report Len Loomans 9-23-16"
e. York Comprehensive Plan Sustainability Goal
f. York Comprehensive Plan Legal Requirements (Introduction Chapter p 3)
g. MacTec 2012 Preliminary Energy Report and Inventory
h. York Community Dialog – "Let's Talk York's Energy Future"
i. Truthout.org Op-ed, "Imagine Fewer Autos" May 6, 2015
j. Portland Press Herald, "Top US city for bicycling" March 13, 2016
k. DOE Clean Cities for info on fuel and vehicles: www1.eere.energy.gov/cleancities/)
l. Eco districts: http://seagrant.mit.edu/conferences/CCS2014/abstracts.php
m. Maine energy profile analysis: https://www.eia.gov/state/analysis.cfm?sid=ME
n. Water and Energy Relationship: http://www.home-water-works.org/energy-water
o. Save Water to Save Energy: Energy Star https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/save-energy/save-water-save-energy
p. Asheville Waste Plan 2008

2. Glossary

Socially responsible: Also known as sustainable business practice or ESG, the consideration of environmental, community, societal and corporate governance criteria in evaluating a company, the term is used to describe the work companies do that has a positive impact on society, the environment or the economy. In 2011, the EU Commission defined the term as the "responsibility of enterprises for their impacts on society. "

A company that has specific and measurable goals that go beyond profit and address such aspects of their business as the company's impact on the environment, working conditions including promoting diversity and career equal opportunity and human rights, family-friendly policies, childcare, the company's involvement in their community, business ethics and anti-corruption measures.

Some of the above has been borrowed from CSR Sweden (a world leader in sustainable business practices): https://sweden.se/business/csr-in-sweden/

Appendix C: Energy Survey Results

Results of York Energy Committee Survey
January 6, 2017

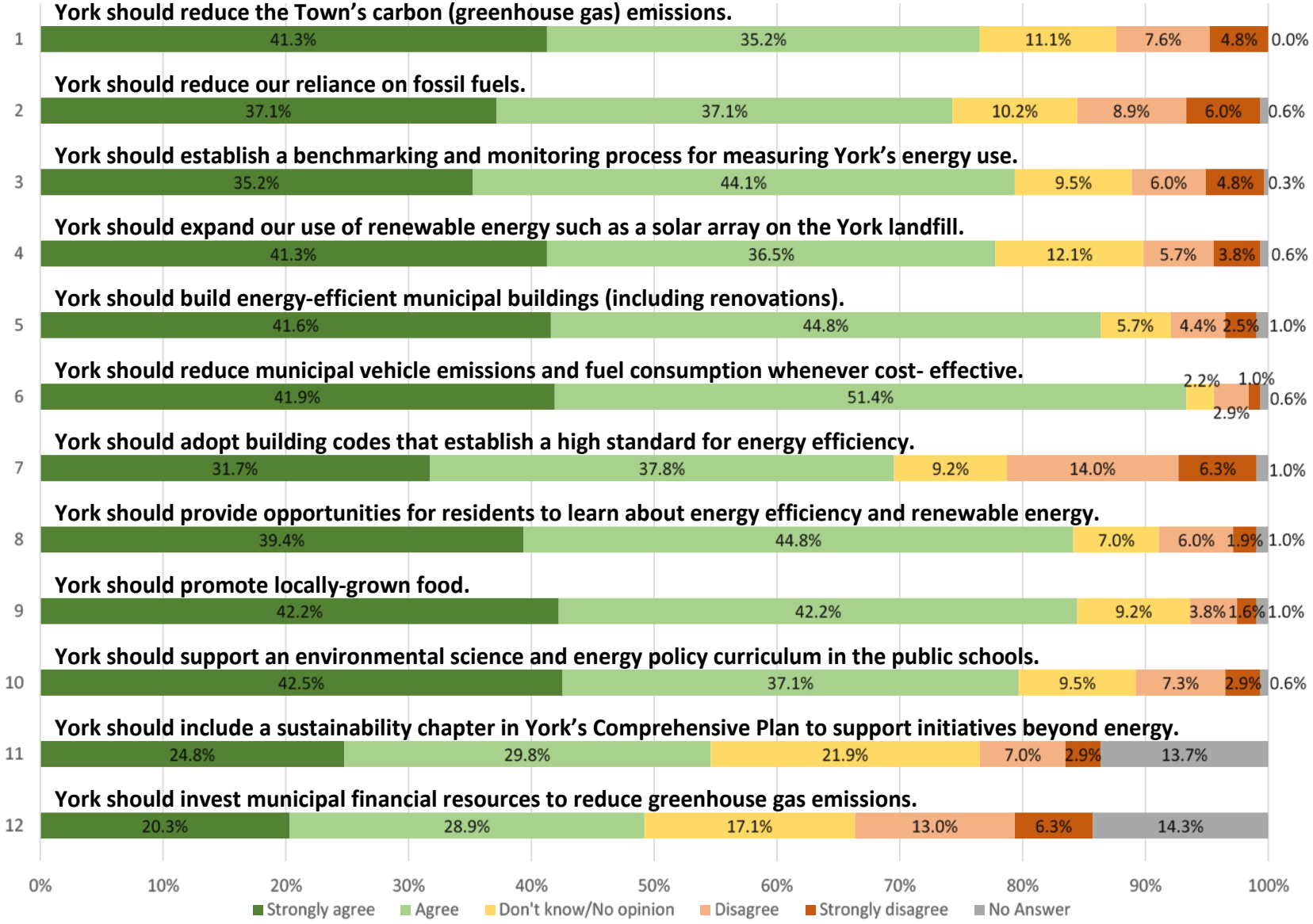
In November and December of 2016, the York Planning Board conducted a random survey of roughly 1,200 people who are registered to vote in York. They were asked a series of 15 questions regarding energy and energy related programs that the Town may want to consider implementing now or in the future. The results of the survey are to be used in the development of an Energy Chapter to be included in the Town's Comprehensive Plan. This document presents the results.

As stated above, the survey was randomly sent to roughly 1,200 registered voters. Unfortunately, 204 surveys were "returned to sender" due to a number of potential reasons (addresses were printed incorrectly on the envelope, people might have recently moved, etc.) However, of the 1,200 surveys that were sent it's conceivable (based on the number of surveys that were "returned to sender") that 996 people received a survey. Regardless, 315 people responded and returned a survey to the Planning Office, which means roughly 32% of the people who received a survey, responded to it.

Below are the tallied responses to questions that required a survey responder to circle a choice (strongly agree, agree, don't know/no opinion, disagree, strongly disagree) that best matched a survey responders opinion on a statement. Generally, people who responded to the survey tended to "strongly agree" or "agree" with all 12 statements.

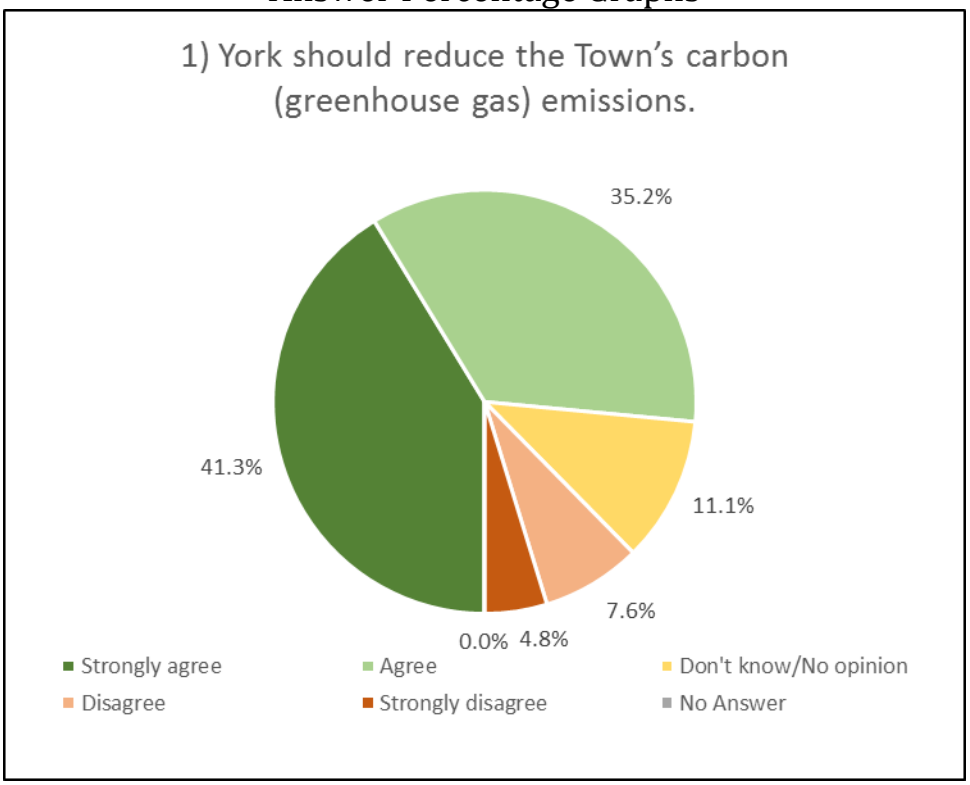
Also, incorporated below is a summary of the three written response open ended questions. The planning Office attempted to highlight and track ideas or concepts that were incorporated or recurring within a particular response and whether they were positive, negative, or merely just mentioned.

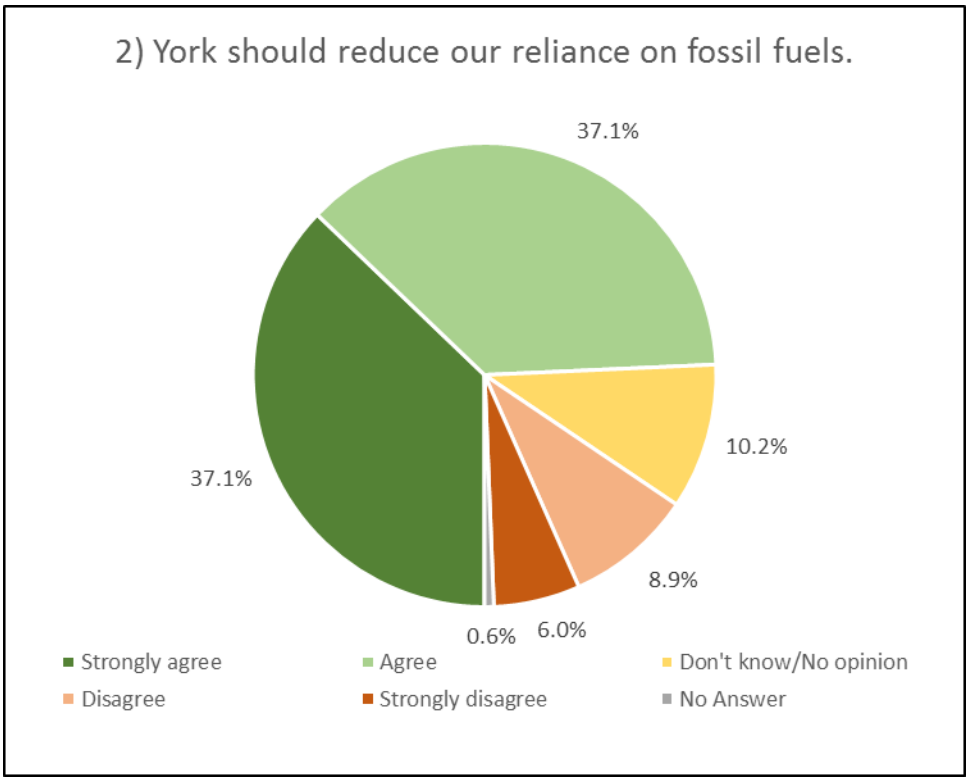
Results of Town of York Energy Survey

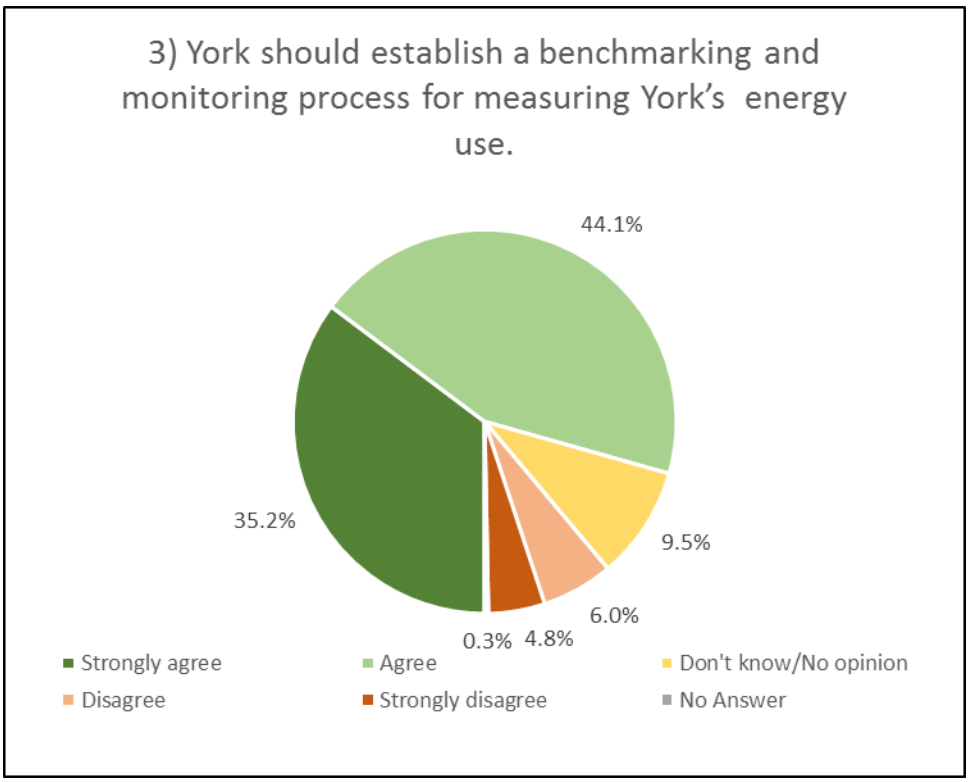


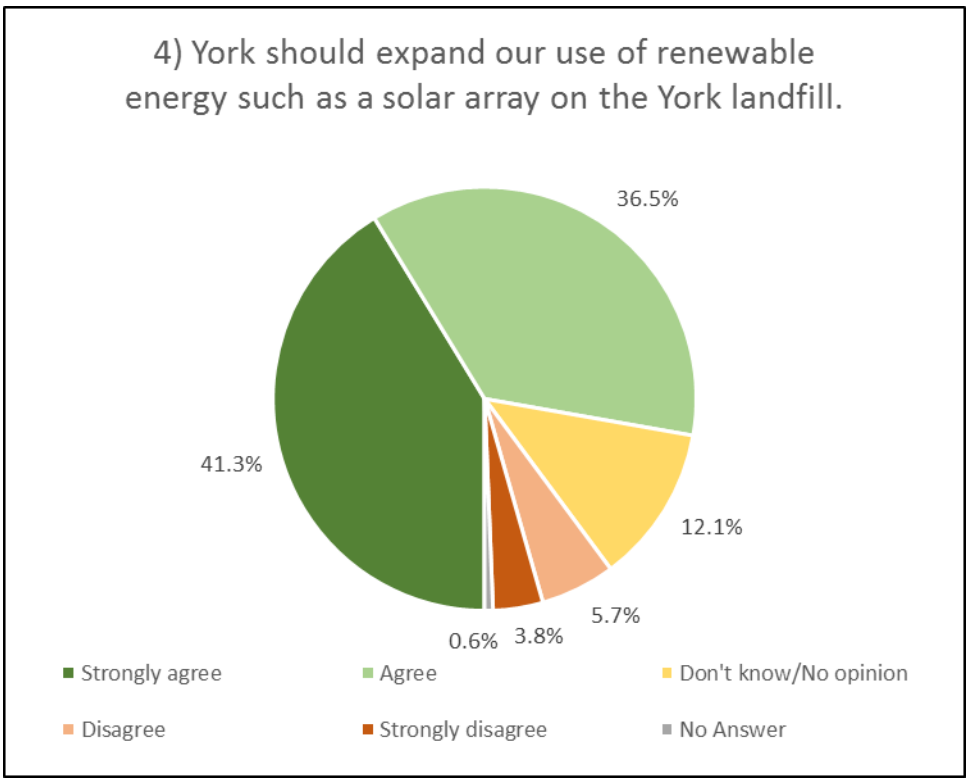
Results of Town of York Energy Survey

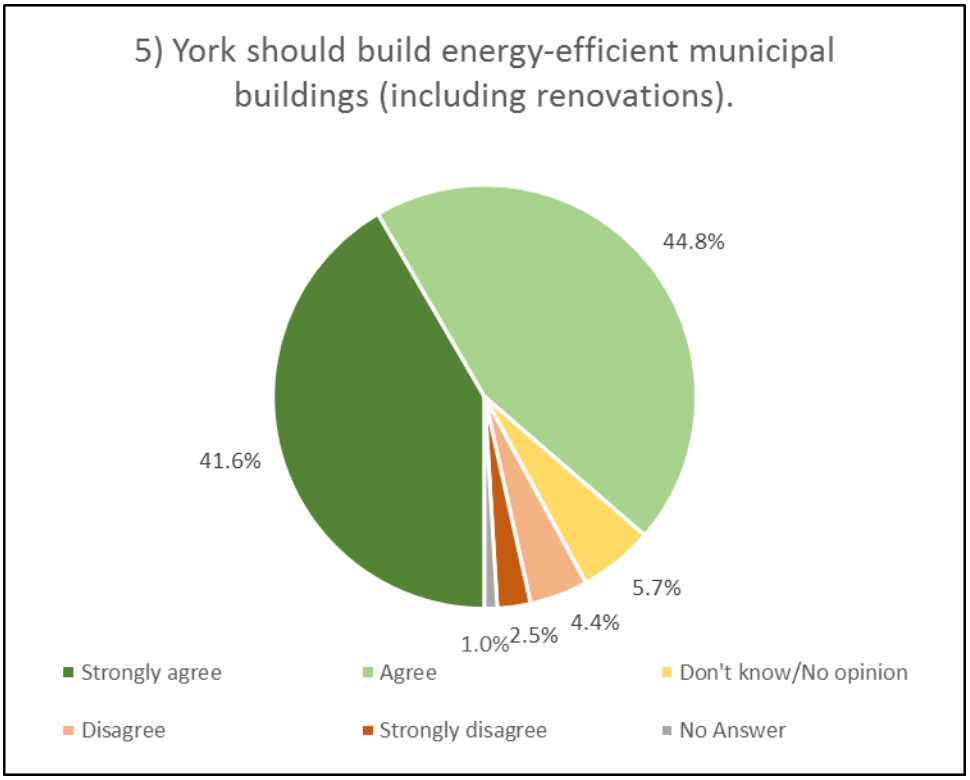
Answer Percentage Graphs

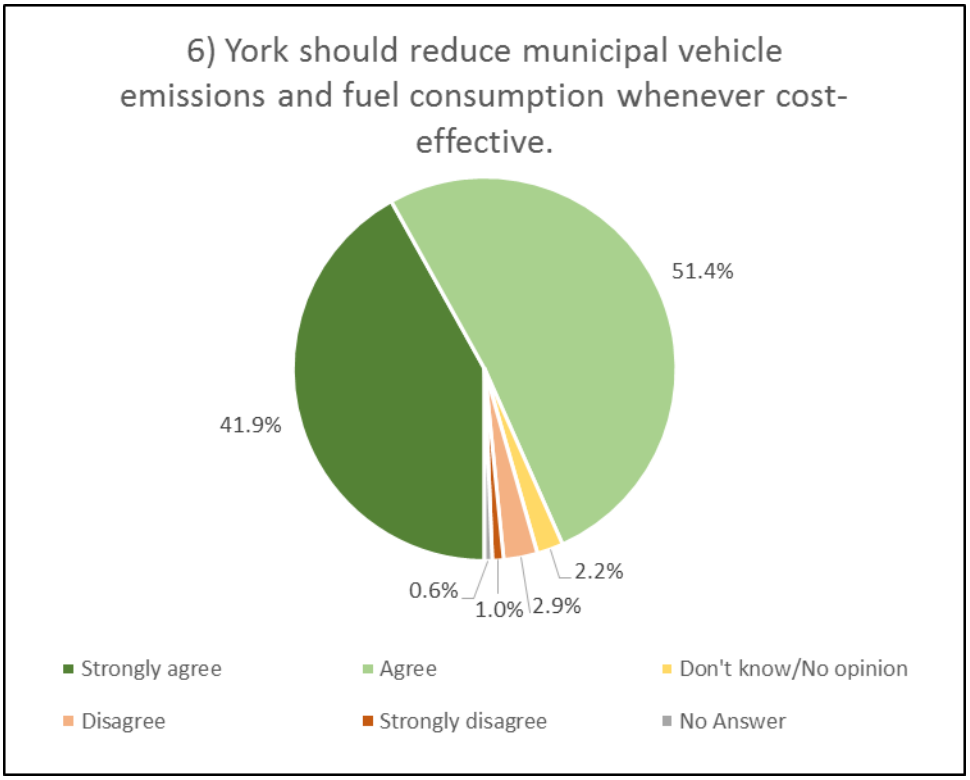


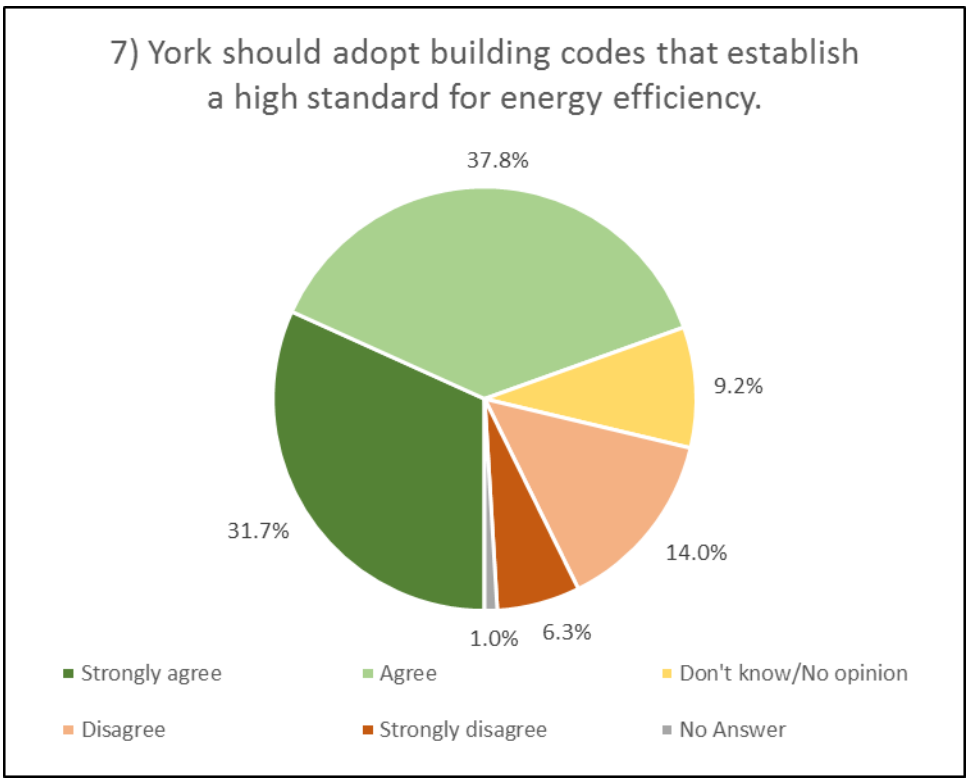


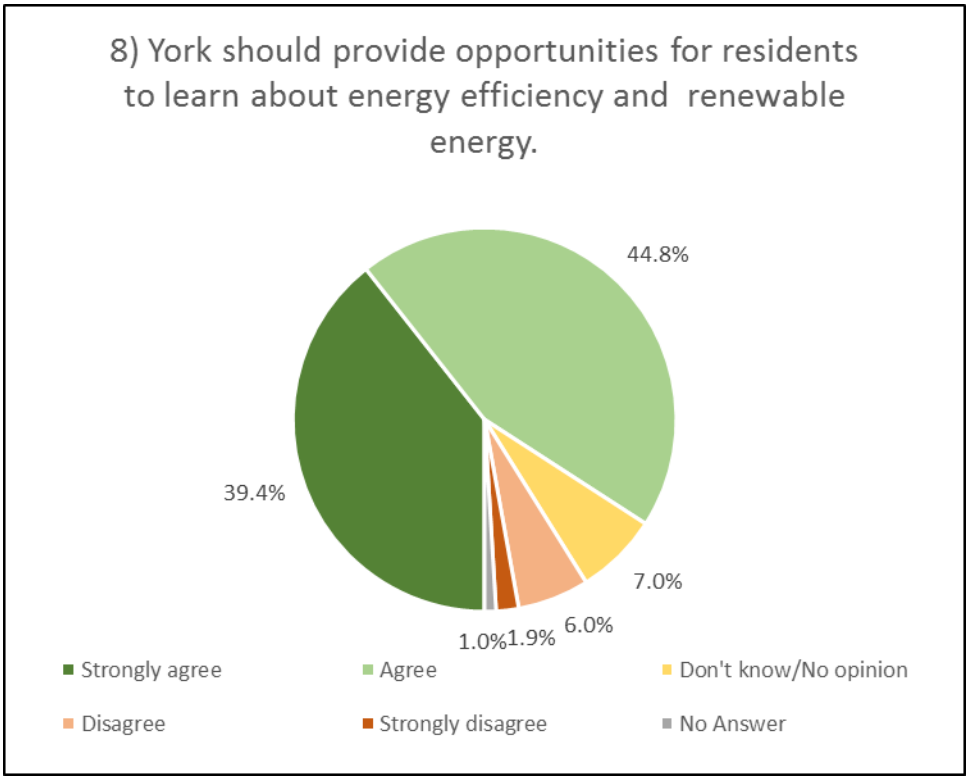

3) York should establish a benchmarking and monitoring process for measuring York's energy use.
44.1%
35.2%
9.5%
6.0%
0.3%
4.8%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer

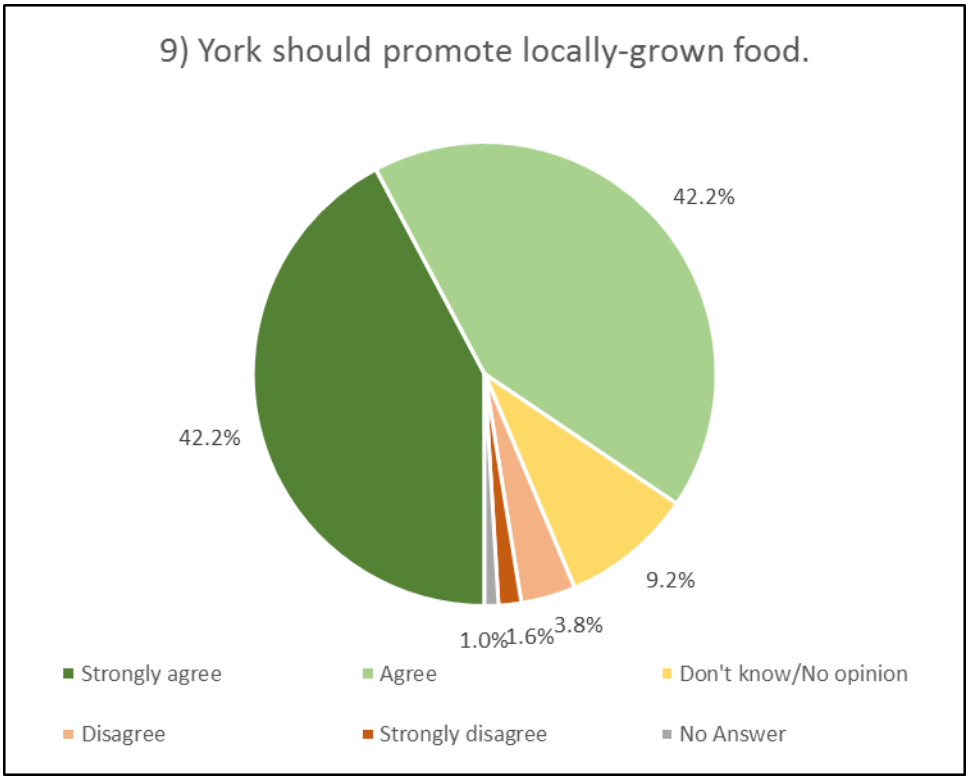

4) York should expand our use of renewable energy such as a solar array on the York landfill.
36.5%
41.3%
12.1%
5.7%
0.6%
3.8%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer

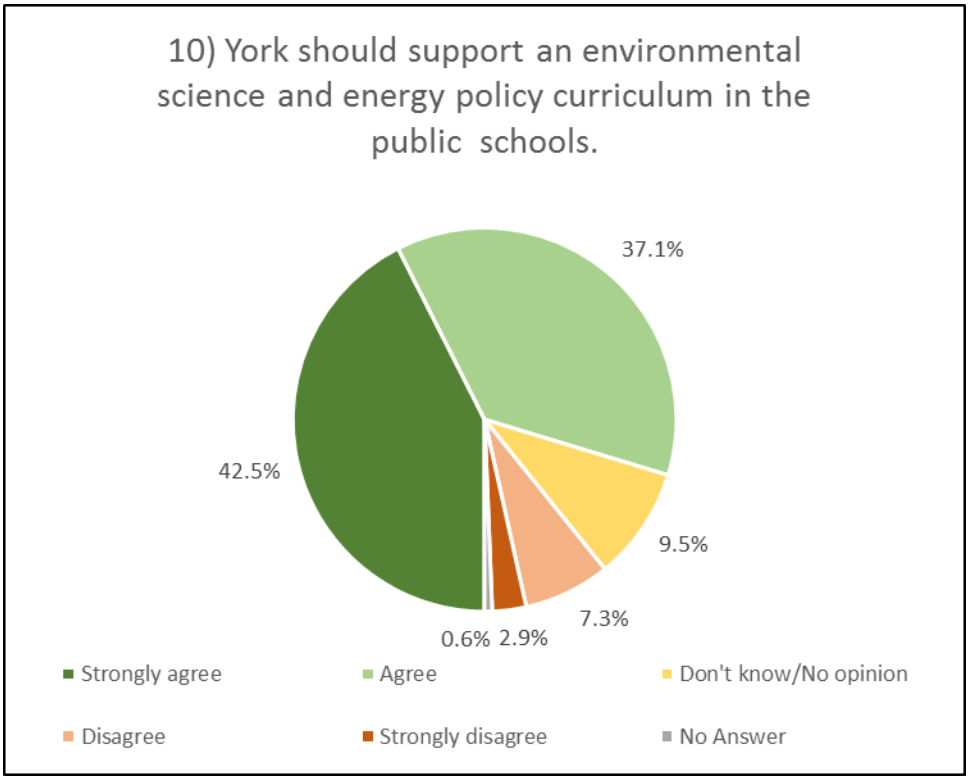

5) York should build energy-efficient municipal buildings (including renovations).
44.8%
41.6%
5.7%
4.4%
2.5%
1.0%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer

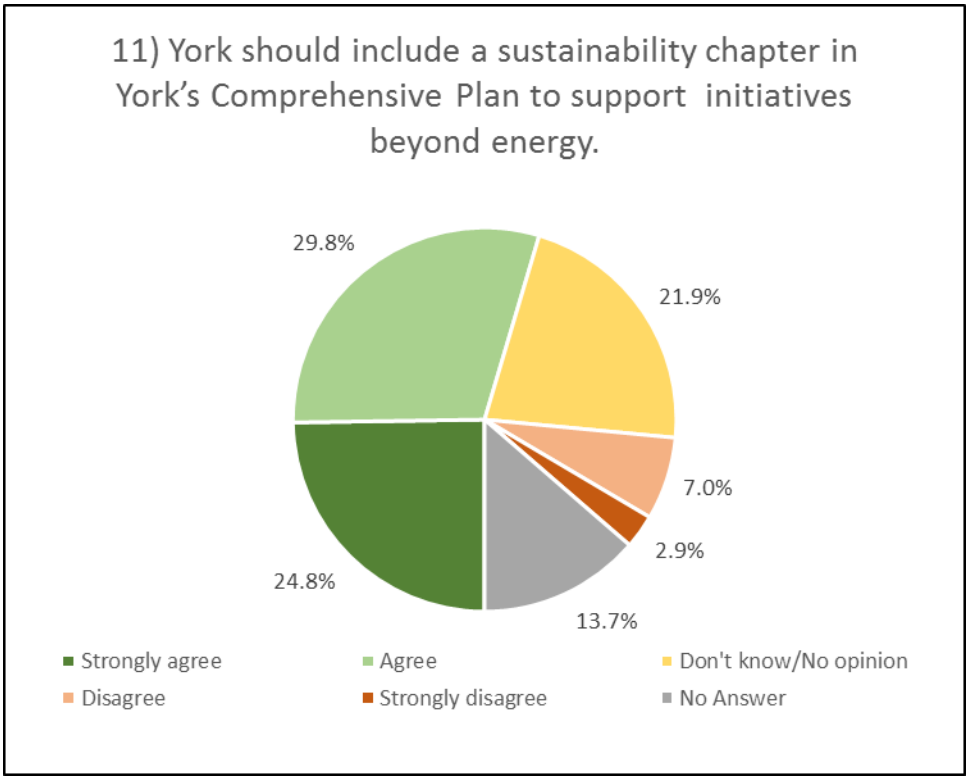

6) York should reduce municipal vehicle emissions and fuel consumption whenever cost-effective.
51.4%
41.9%
2.2%
0.6%
1.0%
2.9%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer

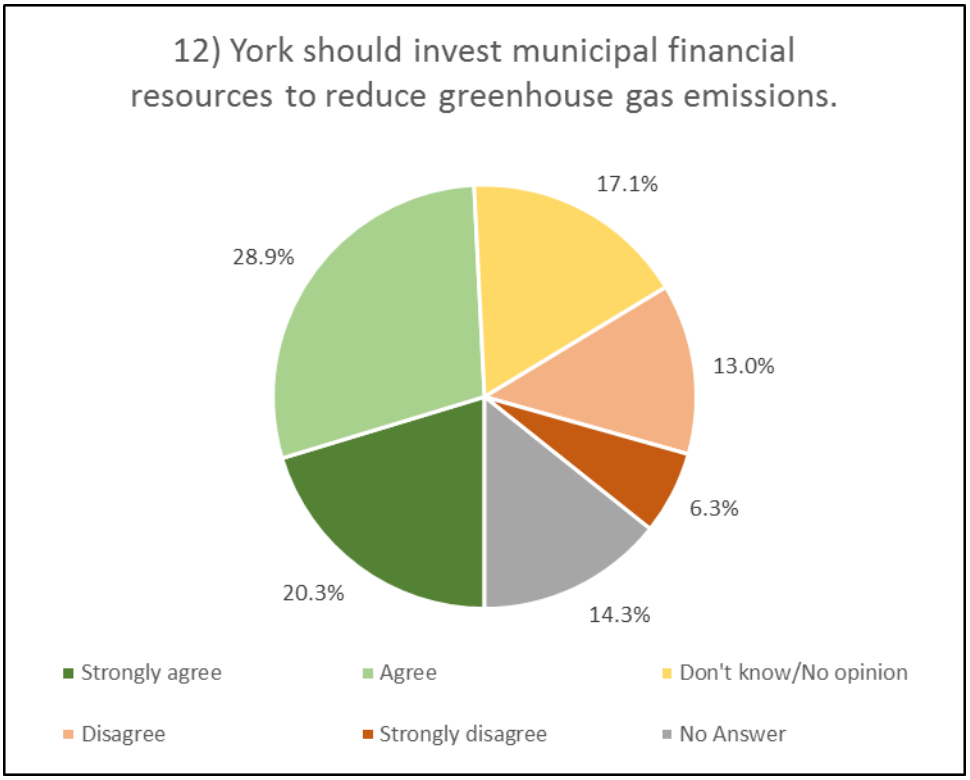

7) York should adopt building codes that establish a high standard for energy efficiency.
37.8%
9.2%
14.0%
6.3%
1.0%
31.7%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer


8) York should provide opportunities for residents to learn about energy efficiency and renewable energy.
44.8%
7.0%
6.0%
1.9%
1.0%
39.4%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer


9) York should promote locally-grown food.
42.2%
42.2%
9.2%
1.0%
1.6%
3.8%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer


10) York should support an environmental science and energy policy curriculum in the public schools.
37.1%
42.5%
9.5%
7.3%
0.6%
2.9%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer


11) York should include a sustainability chapter in York's Comprehensive Plan to support initiatives beyond energy.
29.8%
21.9%
7.0%
2.9%
13.7%
24.8%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer


12) York should invest municipal financial resources to reduce greenhouse gas emissions.
17.1%
28.9%
13.0%
6.3%
20.3%
14.3%
Strongly agree
Agree
Don't know/No opinion
Disagree
Strongly disagree
No Answer

York Energy Committee Survey
Written Answer Summary
January 6, 2017

The Survey asked the following 3 open ended questions:

- What types of energy conservation and energy generation projects or programs would you like to see in York?
- What is the most important energy-efficiency action the town can take?
- Other comments?

The answers provided to these prompts did not exactly follow the questions asked and topics and intentions of the responses flowed between all three. As such all written answers (including commentary written in the margins of the multiple choice section) were reviewed as a whole. Mentions of particular recurring topics were tracked along with if the survey respondent mentioned the idea in a negative or positive light. Of the 315 surveys received, 177 left some form of written response.

Types of energy

Energy Type	Total Mentions	Positive	Negative
Solar	91	89	2
Wind	44	42	2
Geothermal	8	7	1
Hydro (including tidal)	12	12	0
Nuclear	3	3	0
Wood burning	4	3	1
Trash to energy	1	1	0
Blanket "Renewable"	8	8	0

Energy Actions:

Energy Actions	Total Mentions	Positive	Negative
Improve/Upgrade Municipal Buildings	41	39	2
Specifically: Lighting Upgrades	20	20	0
Specifically: Weatherizing/Insulating	9	9	0
Specifically: Heating System Upgrades	11	9	2
Replace Municipal Buildings	2	0	0
Solar Panels on Municipal Buildings	22	22	0
LED street lights	15	15	0
Improve Vehicle Efficiency	30	30	0
Specifically: Hybrid or Electric cars	12	12	0
Reduce or Ban Idling of Vehicles	7	7	0

Other areas of interest:

35 people mentioned that they were concerned with the cost of any of these improvements. This includes people that felt the town should not spend any money on energy initiatives, people that were in favor of energy initiatives but were concerned about their impact on taxes, and people that wanted to make sure that all actions taken had reasonable returns on investment.

8 people wrote that they felt the town should take no action on any energy related front.

14 people felt that the town should offer some form of incentive to property owners who make energy upgrades to their property.

The following ideas and values came up multiple times in responses and were not captured in the above categories:

Issue	Mentions
Improve Bike and Pedestrian Conditions	8
Water Conservation and Protection	3
Encourage Composting	3
Reduce Emissions (generally)	4
Provide Educational Opportunities on Energy Issues	15
Create a Community Garden	2