Town-wide Infrastructure Needs Assessment and Strategies

Project Overview

05/04/15

Background

- All infrastructure (buildings, equipment, paving) wear out and need upgrading or replacement over time
- In Enfield, much of this infrastructure is showing its age
- Infrastructure renewal is now major priority as the Town plans for the future
- Renewal projects already underway at WPCF and EHS
- Town has initiated two comprehensive studies to quantify Town-wide infrastructure needs
  - Facility Condition Assessment by Strategic Building Solutions (SBS)
  - Investment Grade Energy Audit (IGEA) by Honeywell

Presentation Objectives

- Share findings and options from current study:
  - IGEA by Honeywell
- Create a framework for Council decision making about priorities and next steps
- Show how energy performance contracting addresses some renewal needs with no impact to taxpayers
- Set the stage for Council action on infrastructure renewal

“The Big Picture”

- Infrastructure renewal needs are inevitable
- Every effort should be made to soften the impact of infrastructure renewal capital cost on taxpayers
- Funds will need to be allocated for capital improvements
- Priorities need to be established and alternative strategies considered
- Energy infrastructure upgrades are a subset of all projects
- An energy performance contract (EPC) can address some renewal needs with no impact to taxpayers
- EPC could be coordinated with other infrastructure projects for maximum benefit to Town

Energy Performance Contracting

Project Overview

05/04/15

Background

2013

- State Issues RFQ for Energy Savings Companies (ESCOs) – 13 selected/qualified

2014

- March/April: Enfield Sends Letters of Interest to selected ESCOs
- May/June: Enfield Issues RFP to selected ESCOs
- June: Enfield selects Peregrine Energy as Town's TPA/TSP
- July: Enfield conducts interviews of four ESCOs

  (Honeywell, Johnson Controls, Ameresco, & Siemens)
- July: Enfield selects Honeywell to move forward with IGEA
- Aug-Oct: Honeywell conducts IGEA
- November: Honeywell finalizes Preliminary Site Assessment (PSA)

Background

2015

Enfield, Honeywell, & Peregrine Together:

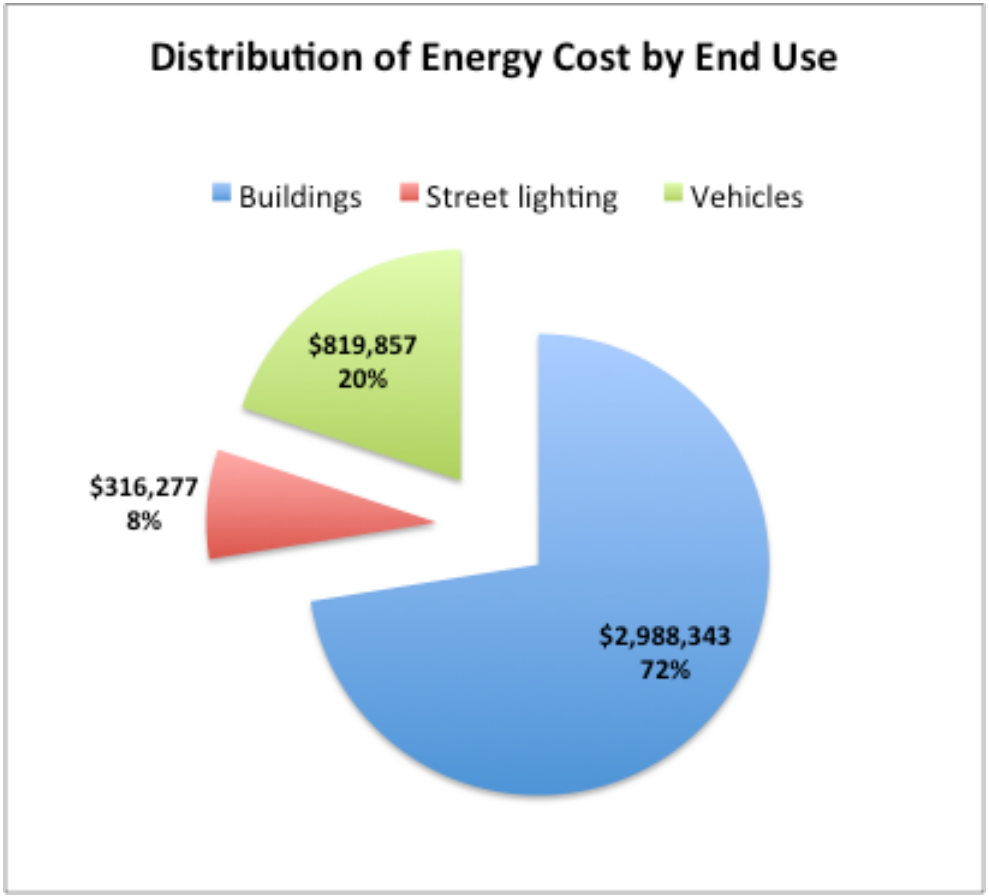
- Development of Project Scope
- Understanding of Acceptable Timeline
- Agreement on M&V Protocols
- Understanding on Markups
- Financing Workshop
- Preliminary IGEA submitted

Still to Come:

- Financing Workshop (invite to follow)
- Finalize Project Scope based on Council input
- Financing Bid

Enfield's Current Energy Profile

- Enfield spent over $4,000,000 for energy in 2013
  - Buildings account for 72% of this energy expense



Brief Understanding

Q. What is energy performance contracting?

A. Self-funding. Money saved from energy improvements pay for the financing of those improvements.

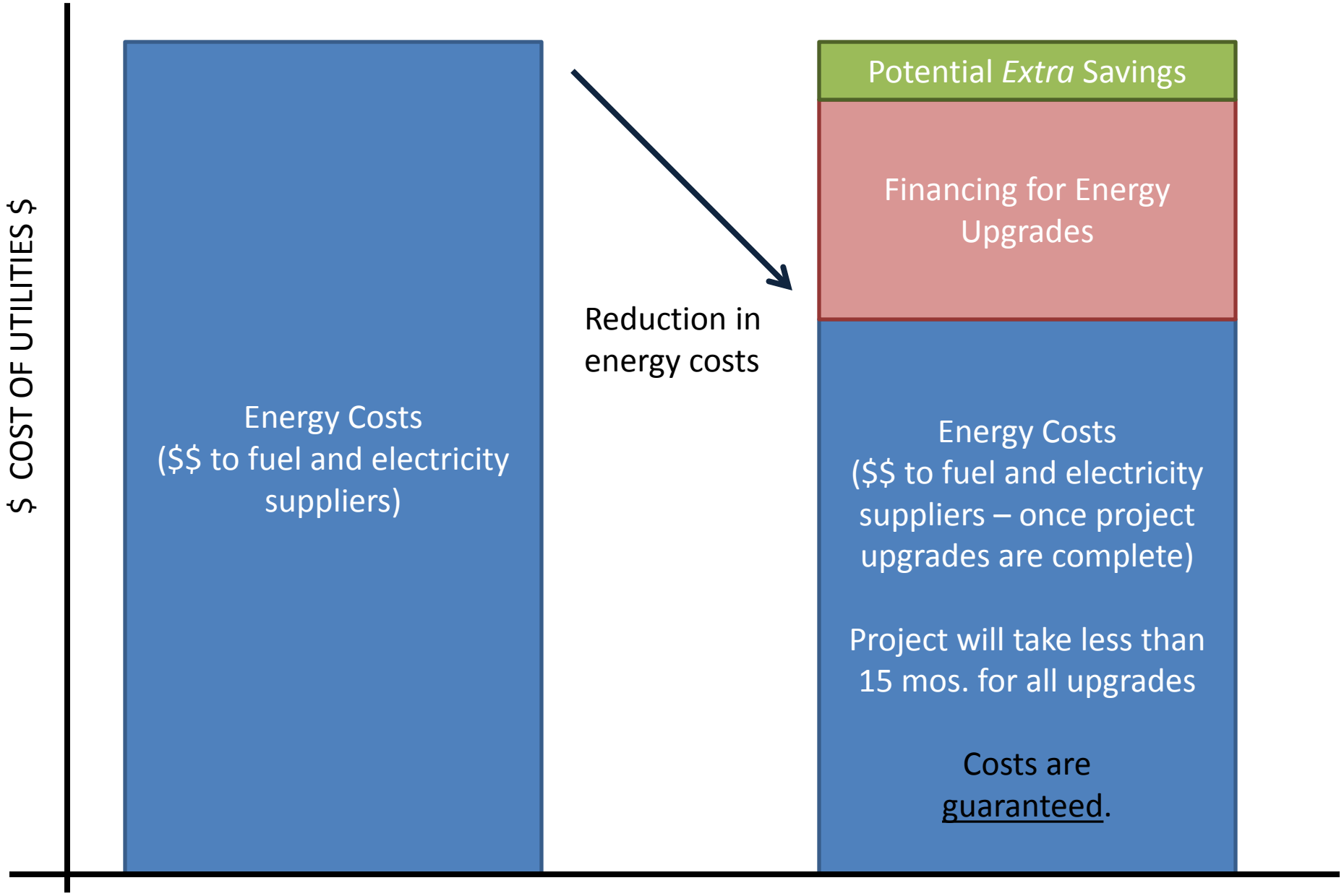
Q. What can be accomplished with energy performance contracting?

A. Use of high-energy ($) savings to pay for upgrades to capital projects (i.e. boilers, RTUs, etc.)

Q. How does this affect the budget and/or taxpayers?

A. The current budget for utilities is enough to pay the reduced-cost utilities and project financing with potential for additional savings realized by the Town. Residents would not see an tax-impact.

How Energy Performance Contracting Works



Honeywell Project - Facilities

Town Buildings

- Emergency Medical Services
- Enfield Senior Center
- Pearl Street Library
- Central Library
- LaMagna Activity Center
- Enfield Town Hall
- Department of Public Works
- Enfield Police Department
- Adult Day Care
- Family Resource Center
- Village Center of Thompsonville*
- Buildings and Grounds

Other

- Street Lighting

**PSA only*

School Buildings

- JFK Middle School
- Eli Whitney School
- Hazardville Memorial School
- Nathan Hale School
- Henry Barnard School
- Edgar Parkman School
- Prudence Crandall School
- Enfield Street School
- Thomas Alcorn School
- Harriet Beecher Stowe School
- Head Start

Facilities Not Included

- WPCF
- Fermi High School
- Enfield High School
- Old Town Hall

Honeywell Project – Potential ESMs

- Lighting & Lighting Controls
- Vending Misers
- Daylight Harvesting
- Building Management System Upgrades
- Building Envelope Improvements
- Boiler Burner Controls
- Pip Insulation
- Steam Trap Retrofit
- Walk-In Freezer/Cooler Controls
- Kitchen Hood Controls
- De-Stratification Fans
- Demand Control Ventilation
- Window A/C Unit Controls
- Mechanical Upgrades – Boiler/Chiller/HVAC
- Water Conservation
- Solar Thermal Domestic Hot Water
- Retro-Commissioning
- Geothermal Installation
- Solar Photovoltaic
- Microgrid
- High Efficiency Transformers
- Power Factor Correction
- Demand Response
- Street Lighting
- Energy Dashboards
- Desktop Computer Power Management
- Computer Peripheral Power Management
- GreenPoint Printer Management System
- Server Virtualization
- Security System Upgrades
- Pool System Upgrades

Honeywell Project

Things to consider:

- What projects lends themselves to performance contracting?
- What is a payback period we are comfortable with?
- Does the simple payback of the ESM fit inside the desired payback period?
- What was not included in the recommended project scope?
- Can we include other capital projects into the total project?
- Are there major capital projects that can fit into the project and finance model?

Honeywell Project

List of Energy Saving Measures & Infrastructure Improvements Per Building

Option 1

ESM #	ESM Description	Emergency Medical Services	Enfield Senior Center	Pearl Street Library	Central Library	Lamagna Activity Center	Enfield Town Hall	Department of Public Works	Enfield Police Department	Adult Day Care	Family Resource Center	Village Center of Thompsonville	Building and Grounds	JFK Middle School	Eli Whitney School	Hazardville Memorial School	Nathan Hale School	Henry Barnard School	Edgar Parkman School	Prudence Crandall School	Enfield Street School	Thomas Alcorn School	Harriet Beecher Stowe School	Head Start	Street Lighting
1A	Lighting and Lighting Controls (LED)													X											
1B	Lighting and Lighting Control (T8)	X	X	X		X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	
2	Street Lighting Upgrades																								X
3A	Boiler Replacements & Pump Upgrades				X		X			X				X	X										
4A	Replace Multi-Zone AHU & Cooling System				X																				
5	Building Management System Upgrades		X		X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	
6	Building Envelope Improvements	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
7	Water Conservation	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	
8	Walk-In Freezer/Cooler Controls													X											
9	Desktop Computer Power Management	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	
10	Computer Peripheral Power Management													X	X	X	X	X	X	X	X	X	X		
11	Plug Load Power Management													X	X	X	X	X	X	X	X	X	X		
12	Pipe Insulation			X		X	X							X	X		X	X	X	X	X	X	X		

Best Project Options

4 Projects for your consideration

- 2 Projects = Strictly Energy Saving Projects
  - Maximize Energy Savings/Minimize Project, Cost, & Payback
- 2 Projects = Energy Savings + Major Project
  - Maximize Use of Energy Savings to include other capital costs at no additional cost to taxpayer
- 1 Recommendation *(based on Council's preference)*

Project Options

Option 1:

- Lighting and Lighting Controls (LED) – *JFK Only*
- Lighting and Lighting Control (T8)
- Street Lighting Upgrades
- Boiler Replacements & Pump Upgrades
- Replace Multi-Zone AHU & Cooling System
- Building Management System Upgrades
- Building Envelope Improvements
- Water Conservation
- Walk-In Freezer/Cooler Controls
- Desktop Computer Power Management
- Computer Peripheral Power Management
- Plug Load Power Management
- Pipe Insulation

*Equates to an annual positive cash flow of $107,000

Energy Savings	$11,056,575
O&M Savings	$1,641,540
Guaranteed Savings	$12,698,115
Utility Incentive	$1,175,576
TOTAL SAVINGS	$13,873,691

Project Cost & Financing	$12,025,628
PURA Rate Buy-Down (1%)	($344,680)
Utility Financing	$500,000
M&V (3 Years)	$90,814
TOTAL COSTS	$12,271,762
NET BENEFIT*	**$1,601,929**

Project Options

Option 2: -

- Option 1, but only LEDs in all buildings

Difference (from Option 1):

- **Total Cost**: $348,773
- **Incentive**: $50,940
- **15-Year Energy Savings**: $419,912
- **15-Year O&M Savings**: $25,758
- **15-Year Total Savings**: $445,697

*Equates to an annual positive cash flow of $83,000

Energy Savings	$11,476,487
O&M Savings	$1,667,325
Guaranteed Savings	$13,143,812
Utility Incentive	$1,226,516
TOTAL SAVINGS	$14,370,328

Project Cost & Financing	$12,895,938
PURA Rate Buy-Down (1%)	($386,273)
Utility Financing	$500,000
M&V (3 Years)	$110,870
TOTAL COSTS	$13,120,535
NET BENEFIT*	**$1,249,792**

Project Options

Option 3: -

- Option 1 +
  - Hazardville Roof Top Units
  - Hazardville Roof Replacement
  - Hazardville Window Replacement

Difference (from Option 1): *20 year payback*

- **Total Cost**: $7,726,360
- **Incentive**: $1,371,616
- **20 Year Energy Savings**: $3,896,797
- **20 Year O&M Savings**: $635,648
- **20 Year Total Savings**: $4,532,445

* Equates to an annual negative cash flow of $37,920

Energy Savings	$14,953,372
O&M Savings	$2,277,188
Guaranteed Savings	$17,230,560
Utility Incentive	$2,547,192
TOTAL SAVINGS	$19,777,752

Project Cost & Financing	$20,252,330
PURA Rate Buy-Down (1%)	($346,270)
Utility Financing	$500,000
M&V (3 Years)	$92,062
TOTAL COSTS	$20,498,122
NET BENEFIT*	**($720,480)**

Project Options

Option 4: -

- Option 1 +
  - Hazardville Roof Top Units
  - Hazardville Roof Replacement
  - *Windows not included*

Difference (from Option 3): *20 year payback*

- **Total Cost**: ($3,283,029)
- **Incentive**: ($628,934)
- **20 Year Energy Savings**: ($1,025,839)
- **20 Year O&M Savings**: ($119,852)
- **20 Year Total Savings**: ($1,145,691)

*Equates to an annual positive cash flow of $44,000

Energy Savings	$13,927,533
O&M Savings	$2,157,336
Guaranteed Savings	$16,084,869
Utility Incentive	$1,918,258
TOTAL SAVINGS	$18,003,127

Project Cost & Financing	$16,933,616
PURA Rate Buy-Down (1%)	($346,270)
Utility Financing	$500,000
M&V (3 Years)	$127,747
TOTAL COSTS	$17,215,093
NET BENEFIT*	**$788,034**

School Building Incentives

For Options 3 & 4: -

- Includes State incentives for school improvements
- Fraction of Roof Work Eligible* for Incentive = 95%
- Fraction of Window Work Eligible* for Incentive = 67%
- State Incentive Rate for Enfield = 71.07%

Example calculation:

- ESM x 95% x 71.07% = **incentive**
- **Windows:** $1,100,000 x 95% x 71.01% = $742,682

Incentive calculated as part of, “utility incentive,” included with Eversource rebates

*Eligible Roof Work is all hazmat, labor, and materials. Roof drain and gutter is not eligible.
*Eligible Window Work is materials, hazmat, and code compliance work.

Project Options

Presented Options Summary

Option 1: Energy Cost Saving Drivers, Term-Based ESMs
Option 2: Option 1, *but* LEDs in all buildings instead of T8s
Option 3: Option 1, *and* Hazardville School Roof Top Units, New Roof, & New Windows
Option 4: Option 1, *and* Hazardville School Roof Top Units & New Roof *(not windows)*

	Energy Savings	O&M Savings	Guaranteed Savings	Utility Incentive	Total Cost	Net Benefit
Option 1	$11,056,575	$1,641,540	$12,698,115	$1,175,576	$12,271,762	$1,601,929
Option 2	$11,476,487	$1,667,325	$13,143,812	$1,226,516	$13,120,535	$1,249,792
Option 3	$14,953,372	$2,277,188	$17,230,560	$2,547,192	$20,498,122	($720,480)
Option 4	$13,927,533	$2,157,336	$16,084,869	$1,918,258	$17,215,093	$788,034

- 15 Year Financing/Payback
- 20 Year Financing/Payback

Project Financing

- **What avenues does the Town have?**
  - Lease-Financing
  - Bonding
- **What benefits can the Town utilize from PC?**
  - PURA (Public Utility Regulatory Agency) – 1% rate buy down
  - Utility Incentives/0% financing for $500,000
  - Multiple financing quotes
- **What are project lengths comprised of?**
  - Project principal pay-off + interest pay-off
  - Example:

    15 year project is roughly 13.5 years principal, 1.5 years interest

Project Financing

- Town arranges municipal lease (TELP); sets up escrow account
- Town pays ESCO out of escrow account as equipment is installed and fully commissioned
- Lease payments begin at overall project completion, using energy savings retained in utility accounts (operating budget)
- Actual savings are confirmed annually by Town's Owner's Agent
- **ESCO reimburses Town for any shortfalls in actual annual energy savings vs. guaranteed savings at then current energy rates**

Project Financing

More things to consider

What are our financing goals?

1. Short pay-off?
2. Money in our pocket?
3. Biggest bang for our buck?
4. Deferred/Eliminated capital costs?
5. Debt avoidance?

“Risk” with Performance Contracting

What happens if…

ESCO doesn’t complete the job or work is sub-par	• Contractor’s bond required • Successful commissioning required before acceptance by Town
Energy savings are not be achieved	• Owner’s agent confirms guaranteed savings • ESCO must make up value of any annual shortfall
Energy prices fall, reducing the value of savings	• Dropping energy prices increase savings in level-funded energy budgets • Additional savings can cover lease expense

Project Benefits

Capital

- Takes millions of dollars and dozens of projects off of the CIP without additional cost to tax payers

Utilities

- Reduction of 8,495,974 kWh of electricity
- Reduction of 542,543 Therms
- Reduction of 6,107 gallons of oil

Project Benefits

Environmental

- Equivalent of removing 545 cars from the road for an entire year
- Equivalent of planting 2,139 trees
- Equivalent to the powering of 131 homes

Greenhouse Gas Emissions Reduction		
Metric Tons of CO2 Saved Per Year	3,076.83	Tons
Metric Tons of SOx Saved Per Year	17.48	Tons
Metric Tons of NOx Saved Per Year	6.80	Tons

What if…

- Town performed same work without Honeywell?

	Total Cost	Mill Rate Increase*
• Option 1	$10,278,082	3.64
• Option 2	$10,957,519	3.88
• Option 3	$15,651,699	5.54
• Option 4	$13,343,809	4.72

**Based on mill equaling $2,826,190*
Assuming all work is done through CIP and in one year

Next Steps for Town Council

- May 2015: Financing Workshop (optional for Council)
- 05/18/15: Regular Council Mtg for further discussion, Q&A
- June 2015: Further discussion or Council consensus/approval
- 07/06/15: Public Hearing Date (set by Council)
- 08/03/15: Council moves question to referendum
- 11/03/15: Referendum