

# Town of Watertown

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## Energy Saving Performance Contracting Program Review and Update



October 2, 2012

# Performance Contracting Overview

## *General Approach*

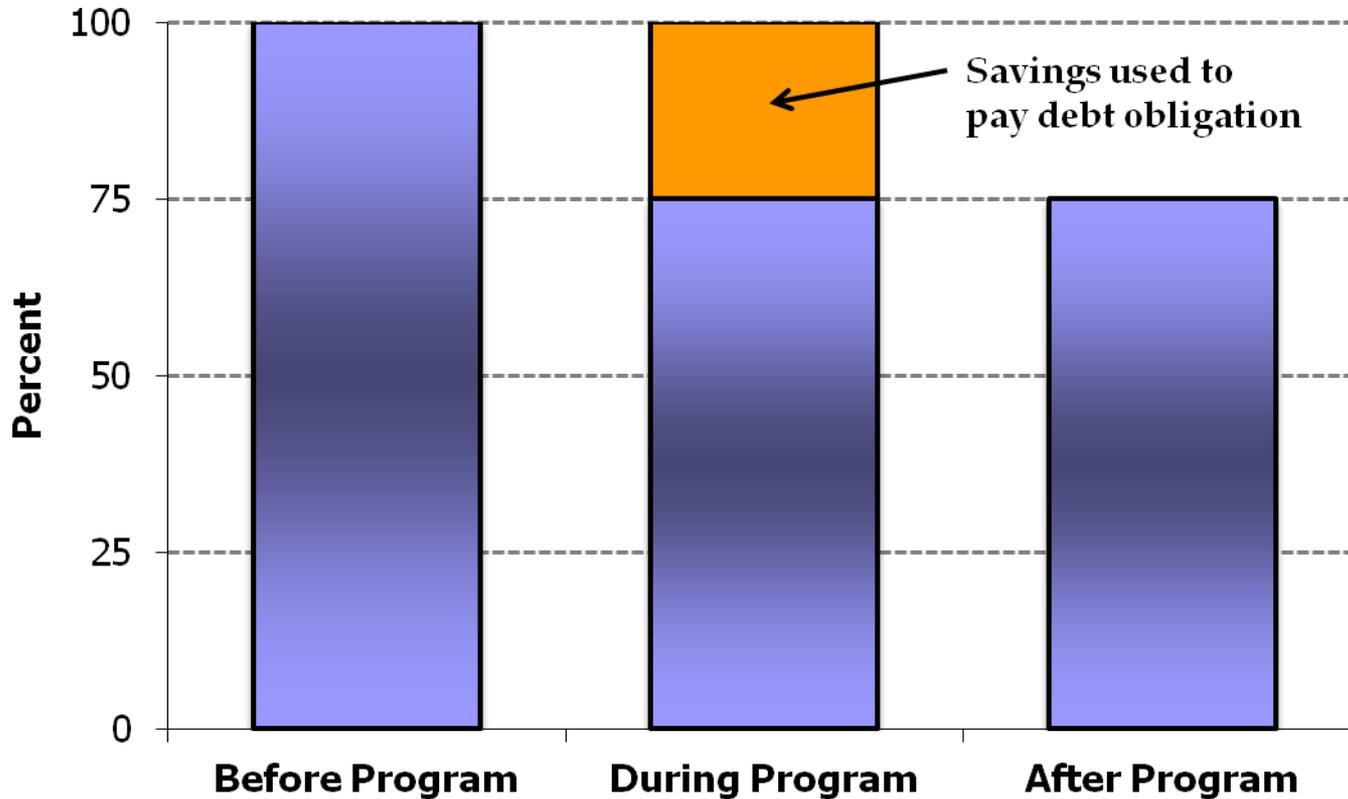
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- ❖ Design-build energy efficiency project that leverages existing operating and energy budgets to implement turnkey energy efficiency and renewable energy solutions:
  - ❑ Upgrade building infrastructure and increase building efficiency
  - ❑ Reduce operating and maintenance costs
  - ❑ Enhance operating staff productivity
  - ❑ Implement renewable energy strategies
  - ❑ Improve indoor air quality
  - ❑ Enhance core curriculum by integrating innovative technologies with educational objectives



# Performance Contracting Overview

*Illustrative Example – 25% Operating Cost Savings*



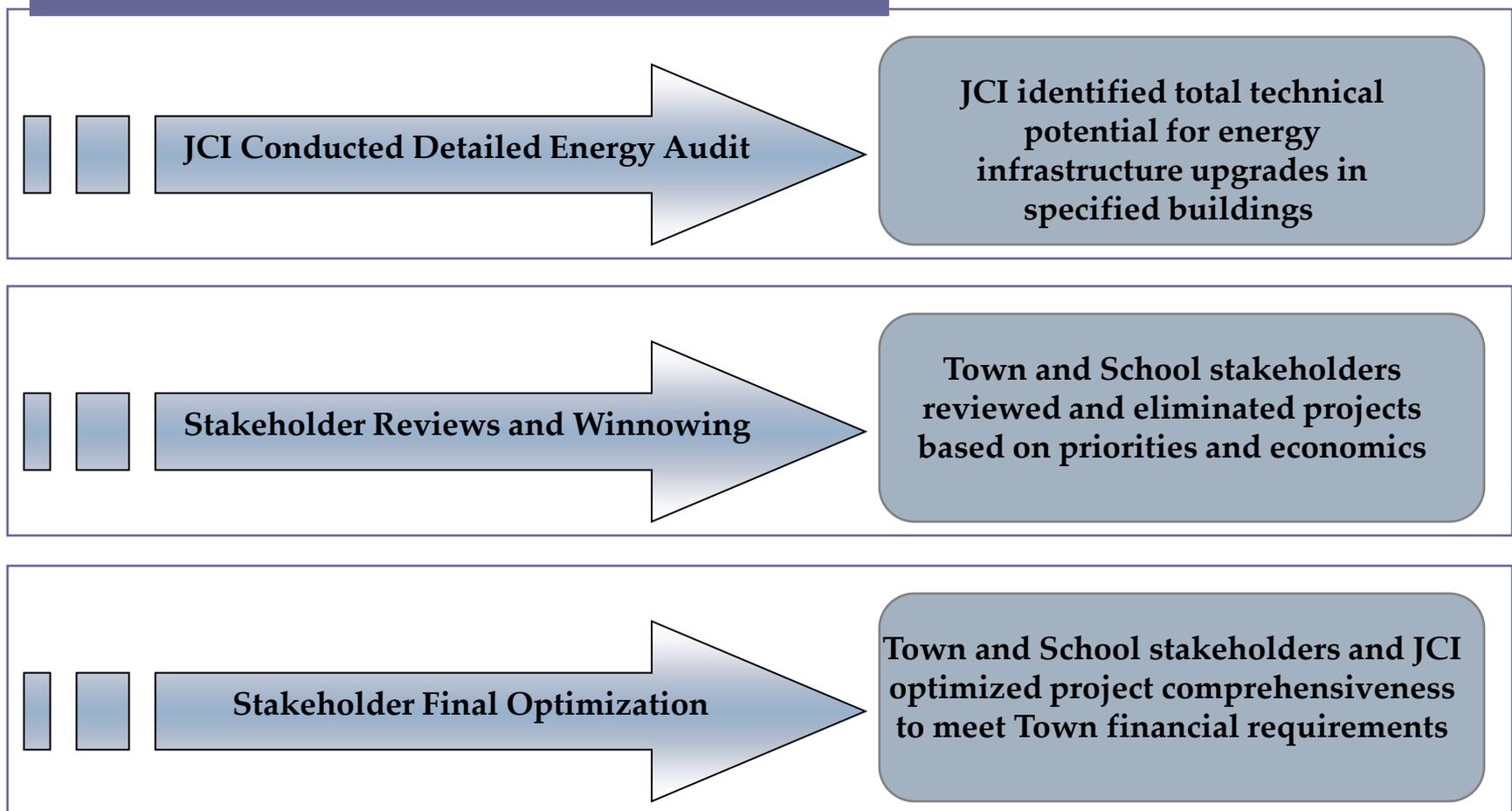
■ Annual Operating Budget

■ Annual Carrying Cost of Program



# Program Optimization

## *Winnowing Process to Achieve Best Value*



# Program Optimization

## *Winnowing Process Results*

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- ❖ Total Technical Potential – Original Proposal
  - ❑ 16 Town and School Buildings
  - ❑ 145 Energy Infrastructure Upgrade Projects
  - ❑ \$10.6 Million in Energy Infrastructure Investments
  - ❑ Cashflow: -\$1.22 million during first 11 years; -\$61,000 over 20 years.
  
- ❖ Winnowing – Initial Scope Refinement
  - ❑ 15 Town and School Buildings (removed Old Police Station)
  - ❑ 118 Energy Infrastructure Upgrade Projects
  - ❑ \$8 Million in Energy Infrastructure Investments
  - ❑ Cashflow: -\$278,000 during first 6 years; \$1.9 million over 20 years.



# Program Optimization

## *Recommended Project – Optimized by Department Staff*

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- ❖ Recommended Project
  - ❑ 14 Town and School Buildings
  - ❑ 97 Energy Infrastructure Upgrade Projects
  - ❑ \$7.35 Million in Energy Infrastructure Investments
  - ❑ Cashflow: -\$144,281 over the first four years; \$1.97 million over 20 years. Utility rebates of approximately \$274,000 used to offset cashflow impact in early years.





# JCI Proposed Program

## *Recommended Optimized Project*

Facility	Project Cost	Annual Savings	Rebates	Simple Payback in Years
Watertown High School	\$1,959,803	\$131,333	\$48,992	14.5
Watertown Middle School	\$689,791	\$58,925	\$52,090	10.8
Hosmer Elementary School	\$870,227	\$74,727	\$33,976	11.2
Lowell Elementary School	\$1,024,666	\$55,721	\$38,171	17.7
Cunniff Elementary School	\$807,959	\$27,324	\$18,002	28.9
Phillips Elementary School	\$440,149	\$26,602	\$2,397	16.5
Watertown Town Hall	\$415,289	\$10,822	\$14,350	37.0
Watertown Library	\$107,030	\$16,372	\$11,324	5.8
Main Fire Station	\$260,089	\$6,952	\$10,166	35.9
North Fire Station	\$20,842	\$1,974	\$25	10.5
East Fire Station	\$121,367	\$1,662	\$3,522	70.9
Department of Public Works	\$211,303	\$27,949	\$7,257	7.3
Ice Rink	\$307,539	\$31,225	\$31,833	8.8
Senior Center	\$91,624	\$1,627	\$1,961	55.1
Investment Grade Audit Cost	\$37,565	-	-	-
<b>Total</b>	<b>\$7,365,245</b>	<b>\$473,215</b>	<b>\$274,066</b>	<b>15.0</b>



# JCI Proposed Program-Post Construction

## *Cashflow Analysis at 3.19% Net Interest Cost*

YEAR	TOTAL ANNUAL COST			ANNUAL SAVINGS	ANNUAL CASHFLOW
	Debt Service*	M&V	Total	Total	
1	\$512,175	\$19,800	\$531,975	\$473,215	\$58,760
2	\$510,175	\$20,394	\$530,569	\$487,411	\$43,158
3	\$508,050	\$21,006	\$529,056	\$502,034	\$27,022
4	\$510,800	\$21,636	\$532,436	\$517,095	\$15,341
5	\$508,300	\$22,285	\$530,585	\$532,608	\$2,023
6	\$510,675	\$22,954	\$533,629	\$548,586	\$14,957
7	\$512,800	\$23,642	\$536,442	\$565,043	\$28,601
8	\$509,675	\$24,352	\$534,027	\$581,995	\$47,968
9	\$510,600	\$25,082	\$535,682	\$599,455	\$63,773
10	\$510,825	\$25,835	\$536,660	\$617,438	\$80,779
11	\$508,575	\$26,610	\$535,185	\$635,961	\$100,777
12	\$510,975	\$27,408	\$538,383	\$655,040	\$116,657
13	\$512,850	\$28,230	\$541,080	\$674,691	\$133,611
14	\$509,200	\$29,077	\$538,277	\$694,932	\$156,655
15	\$510,200	\$29,949	\$540,149	\$715,780	\$175,631
16	\$510,675	\$30,848	\$541,523	\$737,254	\$195,731
17	\$510,625	\$31,773	\$542,398	\$759,371	\$216,973
18	\$510,050	\$32,726	\$542,776	\$782,152	\$239,376
19	\$508,950	\$33,708	\$542,658	\$805,617	\$262,959
20	\$512,325	\$34,719	\$547,044	\$829,785	\$282,741
	\$10,208,500	\$532,033	\$10,740,533	\$12,715,464	\$1,974,931

\* Debt service is based on assumption of level payments with a net interest cost of 3.19%.

Total principal borrowed of \$7,365,000 includes the cost of the Investment Grade Energy Audit.

Debt service is before rebates of \$274,066 which will be used to offset early year cashflow impacts.



# JCI Proposed Program-Post Construction

## Cashflow Analysis at 3.5% Net Interest Cost

YEAR	TOTAL ANNUAL COST			ANNUAL SAVINGS	ANNUAL CASHFLOW
	Debt Service*	M&V	Total	Total	
1	\$517,775	\$19,800	\$537,575	\$473,215	\$64,360
2	\$518,675	\$20,394	\$539,069	\$487,411	\$51,658
3	\$519,225	\$21,006	\$540,231	\$502,034	\$38,197
4	\$519,425	\$21,636	\$541,061	\$517,095	\$23,966
5	\$519,275	\$22,285	\$541,560	\$532,608	\$8,952
6	\$518,775	\$22,954	\$541,729	\$548,586	\$6,857
7	\$517,925	\$23,642	\$541,567	\$565,043	\$23,476
8	\$516,725	\$24,352	\$541,077	\$581,995	\$40,918
9	\$520,175	\$25,082	\$545,257	\$599,455	\$54,198
10	\$518,100	\$25,835	\$543,935	\$617,438	\$73,504
11	\$515,675	\$26,610	\$542,285	\$635,961	\$93,677
12	\$517,900	\$27,408	\$545,308	\$655,040	\$109,732
13	\$519,600	\$28,230	\$547,830	\$674,691	\$126,861
14	\$515,775	\$29,077	\$544,852	\$694,932	\$150,080
15	\$516,600	\$29,949	\$546,549	\$715,780	\$169,231
16	\$516,900	\$30,848	\$547,748	\$737,254	\$189,506
17	\$516,675	\$31,773	\$548,448	\$759,371	\$210,923
18	\$520,925	\$32,726	\$553,651	\$782,152	\$228,501
19	\$519,475	\$33,708	\$553,183	\$805,617	\$252,434
20	\$517,500	\$34,719	\$552,219	\$829,785	\$277,566
	\$10,363,100	\$532,033	\$10,895,133	\$12,715,464	\$1,820,331

\* Debt service is based on assumption of level payments with a net interest cost of 3.5%.

Total principal borrowed of \$7,365,000 includes the cost of the Investment Grade Energy Audit.

Debt service is before rebates of \$274,066 which will be used to offset early year cashflow impacts.



# JCI Proposed Program

## *Cashflow Analysis at 3.5% NIC with 6 Month Ban*

YEAR [1]	TOTAL ANNUAL COST			ANNUAL SAVINGS	ANNUAL CASHFLOW
	Debt Service[1]	M&V	Total	Total [1]	
1	\$183,800	\$19,800	\$203,600	\$118,304	\$85,296
2	\$524,560	\$20,394	\$544,954	\$487,411	\$57,543
3	\$527,812	\$21,006	\$548,818	\$502,034	\$46,784
4	\$532,575	\$21,636	\$553,536	\$517,095	\$36,441
5	\$531,900	\$22,285	\$553,160	\$532,608	\$20,552
6	\$530,875	\$22,954	\$552,454	\$548,586	\$3,868
7	\$529,500	\$23,642	\$551,417	\$565,043	\$13,626
8	\$527,775	\$24,352	\$554,964	\$581,995	\$27,031
9	\$530,613	\$25,082	\$553,095	\$599,455	\$46,360
10	\$528,013	\$25,835	\$555,810	\$617,438	\$61,629
11	\$529,975	\$26,610	\$558,022	\$635,961	\$77,939
12	\$531,413	\$27,408	\$559,733	\$655,040	\$95,307
13	\$532,325	\$28,230	\$556,030	\$674,691	\$118,661
14	\$527,800	\$29,077	\$556,914	\$694,932	\$138,018
15	\$527,838	\$29,949	\$562,212	\$715,780	\$153,568
16	\$532,263	\$30,848	\$561,923	\$737,254	\$175,331
17	\$531,075	\$31,773	\$561,136	\$759,371	\$198,235
18	\$529,363	\$32,726	\$564,764	\$782,152	\$217,388
19	\$532,038	\$33,708	\$562,808	\$805,617	\$242,809
20	\$529,100	\$34,719	\$563,819	\$829,785	\$265,966
	\$10,250,610	\$532,033	\$10,779,168	\$12,360,553	\$1,581,385

[1] Year 1 reflects debt service and energy savings during construction. Debt service is based on 6 month BAN at 1.5% net interest cost and 19.5 yr Bond at a net interest cost of 3.5%. Savings in Yr. 1 reflects 25% of the annual performance guarantee of energy savings during the construction period. Yrs 2-20 reflect annual debt service, annual costs and guaranteed energy savings, post project construction.

\* Total principal borrowed of \$7,365,000 includes the cost of the Investment Grade Energy Audit.

\* Debt service is before rebates of \$274,066 which will be used to offset early year cashflow impacts.

# JCI Proposed Program

## *Optimized Project Savings as a Percent of Baseline Usage*

Facility	Baseline		Post Retrofit Savings		Percent Savings of Baseline	
	Electricity (kWh)	Natural Gas (MMBtu)	Electricity (kWh)	Natural Gas (MMBtu)	Electricity (kWh)	Natural Gas (MMBtu)
High School	1,264,920	13,123	307,738	4,166	24.33%	31.75%
Middle School	691,248	4,389	251,014	1,346	36.31%	30.67%
Hosmer ES	759,410	7,937	178,734	2,728	23.54%	34.37%
Lowell ES	354,720	6,282	103,157	2,751	29.08%	43.79%
Cunniff ES	284,400	3,184	87,555	878	30.79%	27.58%
Phillips ES	175,424	3,926	15,352	1,357	8.75%	34.56%
Town Hall	287,640	1,134	38,078	313	13.24%	27.60%
Library	595,560	1,637	61,444	327	10.32%	19.98%
Main Fire Station	125,880	1,002	19,961	248	15.86%	24.75%
North Fire Station	41,239	475	116	125	0.28%	26.32%
East Fire Station	56,344	471	101	108	0.18%	22.93%
DPW	423,780	5,431	49,258	1,349	11.62%	24.84%
Ice Rink	617,084	1,961	142,684	630	23.12%	32.13%
Senior Center	26,784	195	5,835	48	21.79%	24.62%
<b>Overall</b>	<b>5,704,433</b>	<b>51,147</b>	<b>1,261,027</b>	<b>16,374</b>	<b>22.11%</b>	<b>32.01%</b>



# Next Steps

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- ❖ Contract negotiations
  - ❑ Kopelman and Paige, supported by Beacon will negotiate with JCI:
    - Terms and conditions
    - Final scope of work
    - Measurement and Verification plan
    - Commissioning plan
    - Training plan
  - ❑ Final draft agreement for Council consideration in December 2012
  - ❑ Anticipated execution in January 2013
  - ❑ Loan order in February 2013



# Questions

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Thank You

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