

# Atlanta Central UESC Pilot Project

Elbert P. Tuttle United States Court of Appeals – Atlanta, GA  
Lewis R. Morgan Federal Building and Courthouse – Newnan, GA  
Rome Federal Building Post Office, Courthouse – Rome, GA

FUPWG Presentation 11/3/15



# Strategic Goals

- The plan aligns with “Executive Order Goals” (EPACT / EO 13423 / EO 13693) and will address ways to spotlight and market energy initiatives to all stakeholders of GSA
- Incorporates all Regional SBA goals into the subcontracting process
- Use Physical Condition Survey (PCS), Safety Inspections, SME Input, to provide data based decisions to determine priorities for GSA and building viability for UESC
- R4 Key needs include: Energy and Water conservation, improve Sustainability metrics, improve customer comfort and retention, upgrade aged equipment and leverage 3<sup>rd</sup> party funding with appropriated funds to maximize project effectiveness



# Region 4 UESC Strategic Infrastructure Plan - Pilot Project

- This UESC Energy Efficiency and Strategic Infrastructure Plan is a systemic approach to:
  - Prioritize, consolidate and integrate a comprehensive strategy to replace aging infrastructure
  - Achieve national and regional energy reduction goals – including GSA’s Deep Energy Retrofit initiative
  - Reduced operating costs; improve customer satisfaction; while utilizing the energy savings as a funding source
- Project Funding:
  - Flexible funding options allows project cost to be covered by debt financing in tandem with agency funding
  - UESC’s are authorized up to 25 year finance term
  - The IGA is targeted to achieve a 15 years finance term
  - The financed portion is designed so the savings cover the annual payment



# Region 4 UESC Strategic Infrastructure Plan - Pilot Project

- The following project criteria were used by the GSA staff and AGL during the process of developing this report:
  - Energy conservation measures should improve the comfort and reduce the cost of operating facilities whenever possible
  - Modernize equipment and systems to reduce failure and improve facility operations
  - Energy conservation measures must not reduce the reliability or quality of the facility
  - Performance Verification and Performance Assurance (PV/PA) plan that validates predicted savings
  - AGL will verify baseline energy use prior to construction and commission start of systems installed
  - GSA will have a single point of contact with AGL for Turn-Key project
  - AGL will revisit facilities prior to the one year anniversary to review operations and report items for improvements
  - BDOC Validate is a third party service that collects utility use data, creates a web based dashboard, and allows performance analysis and comparison on the energy use.



# Pilot Project Facility Selection Process

- Maximize Span of Control by Proximity to Region 4 Headquarters Office
- Address needed infrastructure upgrades
- Created Core Team to contribute their discipline / departments expertise
- Involve a broader group from local building staff and other departments for skills development and training of Region 4 staff
- Present and obtain approval by the R4 Board of Directors on each phases ECM's, PA, IGA, and Implementation of ECM's including methodology and funds utilization
- R4 stood up this Pilot Project with the intent to create a ongoing program to leverage all funding sources to improve our portfolio and meet our Strategic Goals



# Goals of Strategic Infrastructure Plan

The efforts of this IGA are intended to directly support the continued success of GSA. Gaining understanding of GSAs Deep Energy Retrofit initiatives, its goals and challenges, was critical to delivering solutions and benefits that will have the lasting and valued impact. GSA goals and challenges include:

Goals	Challenges
Modernize aging facilities infrastructure	Lack of sufficient capital funding for facilities improvements
Improve overall building occupant comfort in an office facility	Compliment in-house technical expertise by developing/implementing large infrastructure upgrades
Upgrade the infrastructure to support the long-term plan	Accomplish deferred infrastructure upgrades and replace aging equipment
Improve operating efficiency and save energy	Accommodate scheduling demands of government personnel



# Buildings Identified for the IGA



Elbert P. Tuttle United States Court of Appeals  
Atlanta, GA



Lewis R. Morgan Federal Building and Courthouse  
Newnan, GA



Rome Federal Building Post Office, Courthouse  
Rome, GA

# Tuttle Court of Appeals

## ELBERT P. TUTTLE UNITED STATES COURT OF APPEALS (TUTTLE) – ATLANTA, GA

- Gross Area (SF): 238,016
- Year Built: 1910
- Renovations:
  - 1934 - Major Upgrade
  - 1985 - HVAC Systems
  - 2006 - 1st Floor Renovation
  - 2008 - Renovation For Admin.
  - 2013 - 1st Floor Training Rooms



- Address: 56 Forsyth Street NW, Atlanta
- Replacement Value: \$ 81,141,624
- Historic Value: National Historic Registry - Fairlie Poplar Historic District
- GSA Facility Conditions Index (Existing) 22.8%
- GSA Facility Conditions Index (Projected) 14.7%

# Tuttle - ECMs Energy Savings (Annually)



	Electricity Consumption (kWh) Savings	Electricity Demand (kW) Savings	Nat Gas Consumption (therms) Savings	Water Sewer Consumption (kGal) Savings	Total Energy (\$) Cost Savings	Maint (\$) Cost Savings
<b>Existing Tuttle Bldg.–Baseline Meter Data</b>	<b>1,934,772</b>	<b>399</b>	<b>12,551</b>	<b>4,910</b>	<b>\$254,508</b>	
CHW System Renovation - New Chiller(s) & Pumps	419,917	76	0	0	\$35,059	\$9,333
Heating System Upgrade - Remove HW Convactor	0	0	738	0	\$945	\$0
DDC Controls & Optimization	141,482	24	1,109	0	\$12,944	\$0
Upgrade Air Distribution to VAV AHU	186,637	0	3,080	0	\$12,680	\$1,667
Lighting Systems - Retrofits and Controls	244,282	66	0	0	\$24,904	\$4,827
Water Conservation Upgrades - Fixtures	1,011	0	127	269	\$6,077	\$372
Water Conservation Upgrades - FloZone	4,126	8	0	11	\$2,017	\$6,450
<b>Proposed ECM Savings</b>	<b>997,455</b>	<b>174</b>	<b>5,054</b>	<b>280</b>	<b>\$94,625</b>	<b>\$22,648</b>
<b>% Reduction from Baseline</b>	<b>52%</b>	<b>44%</b>	<b>40%</b>	<b>6%</b>	<b>37%</b>	

# Morgan Federal Building and Post Office

## LEWIS R. MORGAN FEDERAL BUILDING & COURTHOUSE – NEWNAN, GA

- Gross Area (SF): 53,569
- Year Built: 1968
- Renovation: 1989 – 2ND Floor Renovation
- Last Renovation: 1994 – Energy Improvements
  
- Address: 18 Greenville Street, Newnan
- Replacement Value: \$ 12,163,005
- Historic Value: Not listed on National Historic Registry
- GSA Facility Conditions Index (Existing) 14.6%
- GSA Facility Conditions Index (Projected) 10.9%



# Newnan - ECMs Energy Savings (Annually)



	Electricity Consumption (kWh) Savings	Electricity Demand (kW) Savings	Nat Gas Consumption (therms) Savings	Water Sewer Consumption (kGal) Savings	Total Energy (\$) Cost Savings	Maint (\$) Cost Savings
<b>Existing Newnan–Baseline Meter Data</b>	<b>542,376</b>	<b>226</b>	<b>6,880</b>	<b>401</b>	<b>\$77,654</b>	
CHW System Renovation - New Chiller(s) & Pumps	127,209	74	0	0	\$15,433	\$3,333
Heating System Upgrade - VFD HW Pumps	22,769	3	0	0	\$1,631	\$0
DDC Controls & Optimization	23,326	9	967	0	\$5,459	\$0
Upgrade Air Distribution System to VAV AHU	31,858	0	44	0	\$1,670	\$0
Lighting Systems - Retrofits and Controls	85,174	24	0	0	\$7,414	\$1,605
Water Conservation Upgrades - Fixtures	0	0	73	161	\$1,499	\$84
Water Conservation Upgrades - FloZone	1,487	3	0	5	\$479	\$3,755
<b>Proposed ECM Savings</b>	<b>291,822</b>	<b>113</b>	<b>1,084</b>	<b>166</b>	<b>\$33,586</b>	<b>\$8,778</b>
<b>% Reduction from Baseline</b>	<b>54%</b>	<b>50%</b>	<b>16%</b>	<b>41%</b>	<b>43%</b>	

# Rome Federal Building

## ROME FEDERAL BUILDING & COURTHOUSE (ROME) – ROME, GA

- Gross Area (SF): 98,020
- Year Built: 1973
- Renovation: 1982 – 1<sup>st</sup> Floor  
2004  
2011 – 1<sup>st</sup> Floor (IRS)  
2012 - 2nd Floor Courtrooms
- Address: 600 East First Street, Rome
- Replacement Value: \$ 23,214,082
- Historic Value: Located in Historic District
- GSA Facility Conditions Index (Existing) 45.0%
- GSA Facility Conditions Index (Projected) 31.4%



# Rome - ECMs Energy Savings (Annually)



	Electricity Consumption (kWh) Savings	Electricity Demand (kW) Savings	Nat Gas Consumption (therms) Savings	Water Sewer Consumption (kGal) Savings	Total Energy (\$) Cost Savings	Maint (\$) Cost Savings
<b>Existing Rome – Baseline Meter Data</b>	<b>966,135</b>	<b>479</b>	<b>0</b>	<b>2,503</b>	<b>\$125,864</b>	
CHW System Upgrade - VFD on Pumps	30,151	14	0	0	\$3,874	\$0
Heating System Upgrade - Replace Electric Boiler & Pumps	175,063	192	(6,087)	0	\$36,272	\$1,667
DDC Controls & Optimization	9,435	15	581	0	\$3,710	\$0
Upgrade Air Distribution System to VAV AHU	78,818	47	0	0	\$14,379	\$0
Lighting Systems - Retrofits and Controls	91,498	25	0	0	\$8,697	\$1,518
Water Conservation Upgrades - Fixtures	1,011	0	0	253	\$1,869	\$153
Water Conservation Upgrades - FloZone	3,463	7	0	251	\$3,277	\$5,400
<b>Proposed ECM Savings</b>	<b>389,440</b>	<b>301</b>	<b>(5,505)</b>	<b>504</b>	<b>\$72,078</b>	<b>\$8,738</b>
<b>% Reduction from Baseline</b>	<b>40%</b>	<b>63%</b>	<b>0%</b>	<b>20%</b>	<b>57%</b>	

# All Buildings Recommended ECMs

	Electricity Consumption (kWh) Savings	Electricity Demand (kW) Savings	Nat Gas Cons (therms) Savings	Water Sewer Consumption (kGal) Savings	Total Energy (\$) Cost Savings	Maint (\$) Cost Savings
<b>All Bldg. – Baseline Meter Data</b>	<b>3,443,283</b>	<b>1,104</b>	<b>19,431</b>	<b>7,815</b>	<b>\$458,025</b>	
CHW System Renovation - New Chiller(s) & Pumps	577,276	164	0	0	\$54,366	\$12,667
Heating System Upgrade	197,833	195	(5,348)	0	\$38,849	\$1,667
DDC Controls & Optimization	174,243	48	2,657	0	\$22,113	\$0
Upgrade Air Distribution System to VAV AHU	297,313	47	3,124	0	\$28,729	\$1,667
Lighting Systems - Retrofits and Controls	420,954	116	0	0	\$41,015	\$7,950
Water Conservation Upgrades - Fixtures	2,022	0	200	683	\$9,445	\$609
Water Conservation Upgrades - FloZone	9,077	18	0	267	\$5,773	\$15,605
<b>Proposed ECM Savings</b>	<b>1,678,717</b>	<b>588</b>	<b>633</b>	<b>950</b>	<b>\$200,289</b>	<b>\$40,164</b>
<b>% Reduction from Baseline</b>	<b>49%</b>	<b>53%</b>	<b>3%</b>	<b>12%</b>	<b>44%</b>	
<b>*NR-ECMs</b>						

# Facility Condition Index, Energy & Water Savings, GHG

Facility Assessment	Replacement Value	Pre-Const. (\$)	Post Const. (\$)	Reduction (\$)	Pre-Const. FCI%	Post Const. FCI%
Tuttle	\$ 81,141,624	\$ 18,480,435	\$ 11,957,110	\$ 6,523,325	22.8%	14.7%
Newnan	\$ 12,163,005	\$ 1,777,102	\$ 1,326,186	\$ 450,916	14.6%	10.9%
Rome	\$ 23,214,082	\$ 10,445,685	\$ 7,281,027	\$ 3,164,658	45.0%	31.4%
<b>Total</b>	<b>\$ 116,518,711</b>	<b>\$ 30,703,222</b>	<b>\$ 20,564,323</b>	<b>\$ 10,138,899</b>	<b>26.4%</b>	<b>17.6%</b>

Energy and Water Savings	Pre-Construction	Post Construction	Energy / Water Savings	% Savings
Electricity Use (kWh/ Year)	3,443,283	1,784,214	1,659,069	48%
Natural Gas Use (Therms / Year)	19,431	18,798	633	3%
Water & Sewer (kGal / Year)	7,815	6,865	950	12%

GHG Emission Reduction	Pre-Construction	Post Construction	Savings
CO2 (kg / Year)	4,845,313	2,510,707	2,334,606
SO2 (kg / Year)	35,509	18,400	17,109
NOX (kg / Year)	5,851	3,032	2,819



# Department of Energy – BLCC 5

BLCC Summary – 15 year Term	<u>Do Nothing - No ECMs</u>	<u>Base - All ECMs</u>
	Present Value	Present Value
Initial Cost	\$0	\$10,146,084
Energy Consumption Costs	\$5,186,580	\$2,869,407
Energy Demand Costs	\$0	\$0
Energy Utility Rebates	\$0	\$0
Water Usage Costs	\$1,266,004	\$1,112,051
Water Disposal Costs	\$0	\$0
Annually Recurring OM&R Costs	\$578,048	\$0
Non-Annually Recurring OM&R Costs	\$0	\$0
Replacement Costs	\$11,042,322	\$0
Less Remaining Value	\$0	\$0
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<b>Total Life-Cycle Cost</b>	<b>\$18,072,955</b>	<b>\$14,127,542</b>

Base Case	Total Energy Savings	Annual Maint. Savings	Total Project Cost	Total Buy Down Amount	SP (yrs.)	Int. Rate (%)	Loan Term (yrs.)	Total LCC (\$)	LCC Discounted SP (yrs.)/ ROR (%)
								Do-Nothing \$18,072,955	
All Buildings	\$200,289	\$40,164	\$10,146,084	\$7,096,919	12.7	3.70%	15	\$14,127,542	8.91 yrs./ 5.3%

# Net Zero - Solar PV: Rome and Newnan



Recommended System	System Cost	Annual Energy Generated	Average Power Cost	Annual Saving
<u>Rome - 330 kW (DC) Solar Photovoltaic System</u>	\$1,371,468	380,052 kWh	\$0.082	\$31,164
<u>Newnan - 168 (DC) kW Solar Photovoltaic System</u>	\$851,465	210,644 kWh	\$0.082	\$17,273
<u>Total Systems – 498 kW (DC)</u>	\$2,222,933	587,420 kWh	\$0.082	\$48,437

Net Zero - Energy	kWh or Therms / Year
Existing Electricity use	1,508,511
Electricity Reduction - Post Deep Energy Retrofit	681,262
Post Retrofit Electricity Consumption (kWh / Year)	827,249
Natural Gas Consumption (Therms / Year)	11,301
Self Generated Renewable Energy Credits	1,181,392
<b>Net Renewable Energy</b>	<b>-22,930</b>



GHG	Emission Reduction
CO2 (kg / Year)	1,222,203
SO2 (kg / Year)	9,661
NOX (kg / Year)	1,519



# What's Next for R4 Alternate Financing Program

- Region 4 has successfully created an Alternate Finance Strategic Program and intends to implement new UESC and ESPC projects on an annual basis
- FY16:
  - UESC:
    - Lennon FB Wilmington, NC
    - Hiram Ward FB Winston Salem, NC
  - ESPC/NDER:
    - Selection process underway in R4
- R4 will seek to use this program throughout the 144 building portfolio to address our strategic goals.

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