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INVESTING IN GEORGIA'S  
ENERGY, LAND & WATER RESOURCES



# *Energy Performance Contracting*

Association of Energy Engineers

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# Welcome

## *Association of Energy Engineers*



## Water Resources

- State Loans
- Federal Loans
- Grants



## State Energy Office

- Weatherization
- State Energy Program
- State Utilities Program
- Energy Efficiency Conservation Block Grants



## Land Conservation Program

- Grants
- Loans
- Tax Credits



## Fuel Tank Program

- Remediate
- Monitor

Georgia Environmental Finance Authority



# State Utility Program (SUP)



- 140 Million square feet
- 17 Million square feet of leased space
- 15 trillion Btu/yr, \$200 Million/yr
- Largest Georgia Power Customer

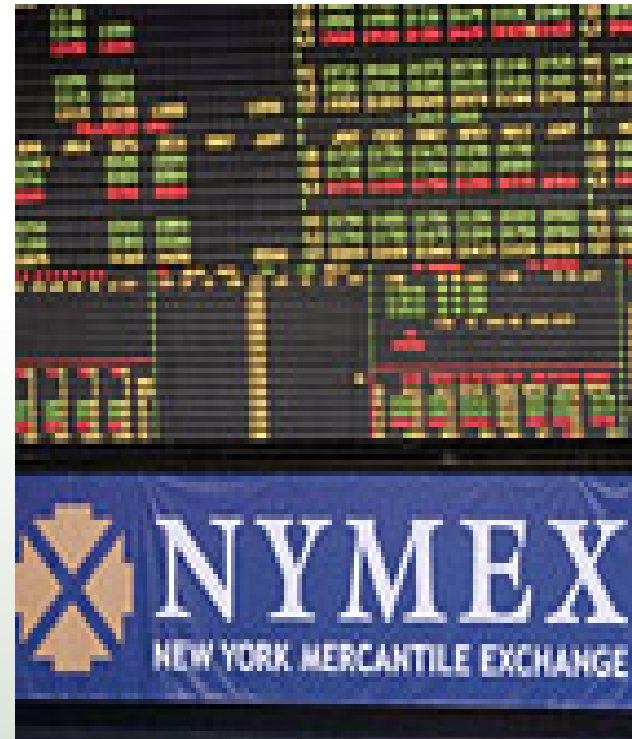
# The Georgia Energy Challenge

This unique initiative started in 2008 when all state agencies committed to reduce energy consumption by 15 percent by 2020.



The [www.GeorgiaEnergyChallenge.org](http://www.GeorgiaEnergyChallenge.org) is designed to encourage everyone in the state to track and conserve energy.

- GNGPP purchased 4.2 mmBtu/\$19.8 million natural gas for state agencies YTD FY12. Natural gas procurement marketer solicitation in 2013.
- Electric rate optimization planning underway



## Energy Efficiency and Sustainable Construction Act

- Effective 7-1-10 for major construction/ renovation work
- Requirements/incentives for:
  - Commissioning
  - Water-use reduction
  - Use of Georgia-based materials
  - Energy modeling/life cycle analysis
- Awards—one to four Peaches—under development





# Energy Performance Contracting EPC

- What is Energy Performance Contracting?
- What is special for State Entities?
- What is the timing for this program?
- What are the program requirements?
- What are the available resources?
- How to prioritize project work
- Questions



# How Does The Money Flow?

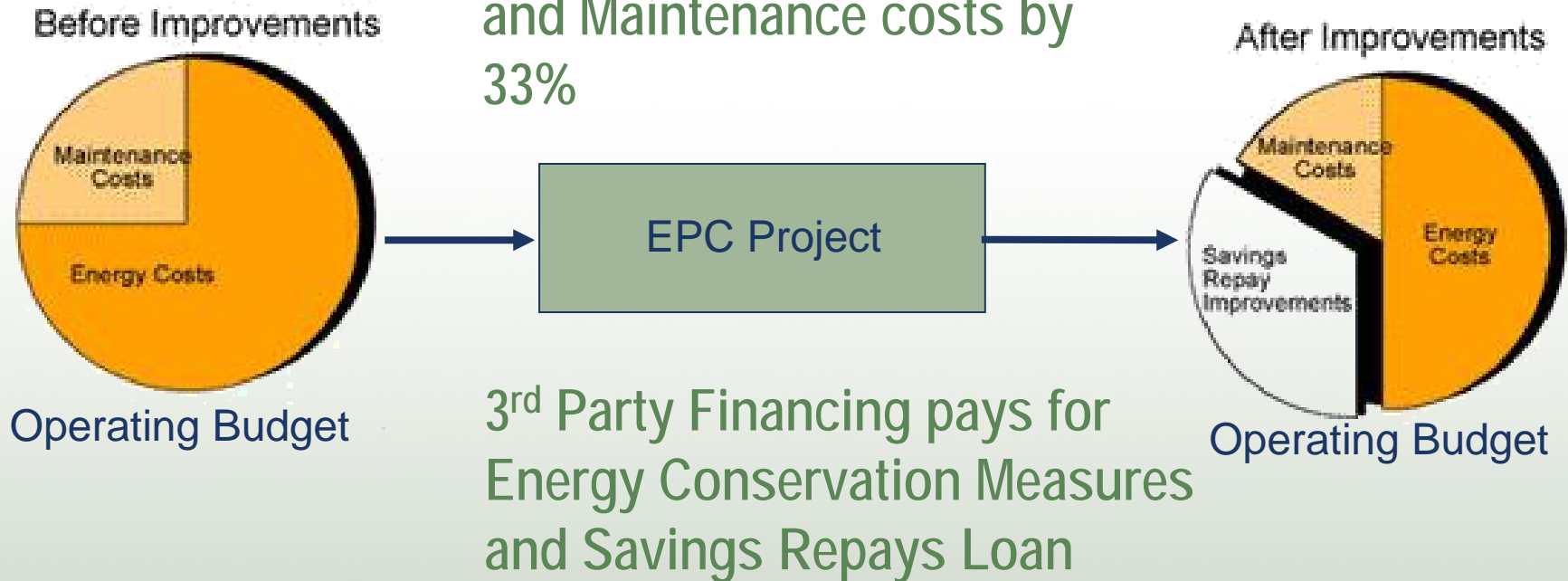
## Before Improvements



Utility Costs in Annual Operating Budget

# How Does The Money Flow?

Proposed Energy Conservation Measures (ECMs) might reduce Energy and Maintenance costs by 33%





# EPC Process Flow

Phase 1 Project Determination	Phase 2 Procurement/ ESCO Selection	Phase 3 Investment Grade Audit	Phase 4 Contract and Construction	Phase 5 Ongoing Services
<b>Project Determination</b>	<b>Multiple Energy Service Companies</b>	<b>One Energy Service Company</b>		
<b>Planning and Project Choices</b>	<b>Planning then RFQ &amp; RFP</b>	<b>Investment Grade Audit</b>	<b>Contract and Construction</b>	<b>Maintenance, Recommissioning and Measurement &amp; Verification</b>
<b>Agency + Program Admin + trusted advisors</b>	<b>Agency + Procurement + ESCOs</b>	<b>Agency + Procurement + Construction Management + ESCO</b>	<b>Agency + Procurement + Lender + Construction Management + ESCO</b>	<b>Agency + ESCO</b>



# EPC What is happening?

## EPC PROCESS STEPS

PLANNING	PROCUREMENT	AUDIT	FINAL CONTRACT	LIFE OF CONTRACT
ESPC education/training for agency staff	Establish procurement schedule; prepare and issue RFQ or RFP to ESCOs	Negotiate and execute audit contract with ESCO	Negotiate and execute the Energy Services Agreement	Approve and accept project installation
Decide to proceed with a project	Assemble and train evaluation team	Review and approve ESCO's audit report/project proposal	Solicit and select source of project financing (e.g. tax-exempt lease; bonds etc.) Negotiate and execute financing agreement	ESCO conducts M&V of savings
Select project site	Evaluate ESCO qualifications/proposals	Review and approve M&V Plan	ESCO constructs project	Operate and maintain project site as per terms of the Energy Services Agreement
	Select highest ranked ESCO	Review and approve Commissioning Plan	ESCO conducts project commissioning	Review and approve M&V reports/annual reporting requirements



# Why would we do EPC?

- Georgia Energy Challenge (15% reduction in electrical use by 2020)
- For State Agencies - GESPC Act
- Outside of appropriations process
- Self-funding (budget neutral – or positive)
- Can make long payback items financeable
- Enjoy benefits of new systems immediately and repay over time

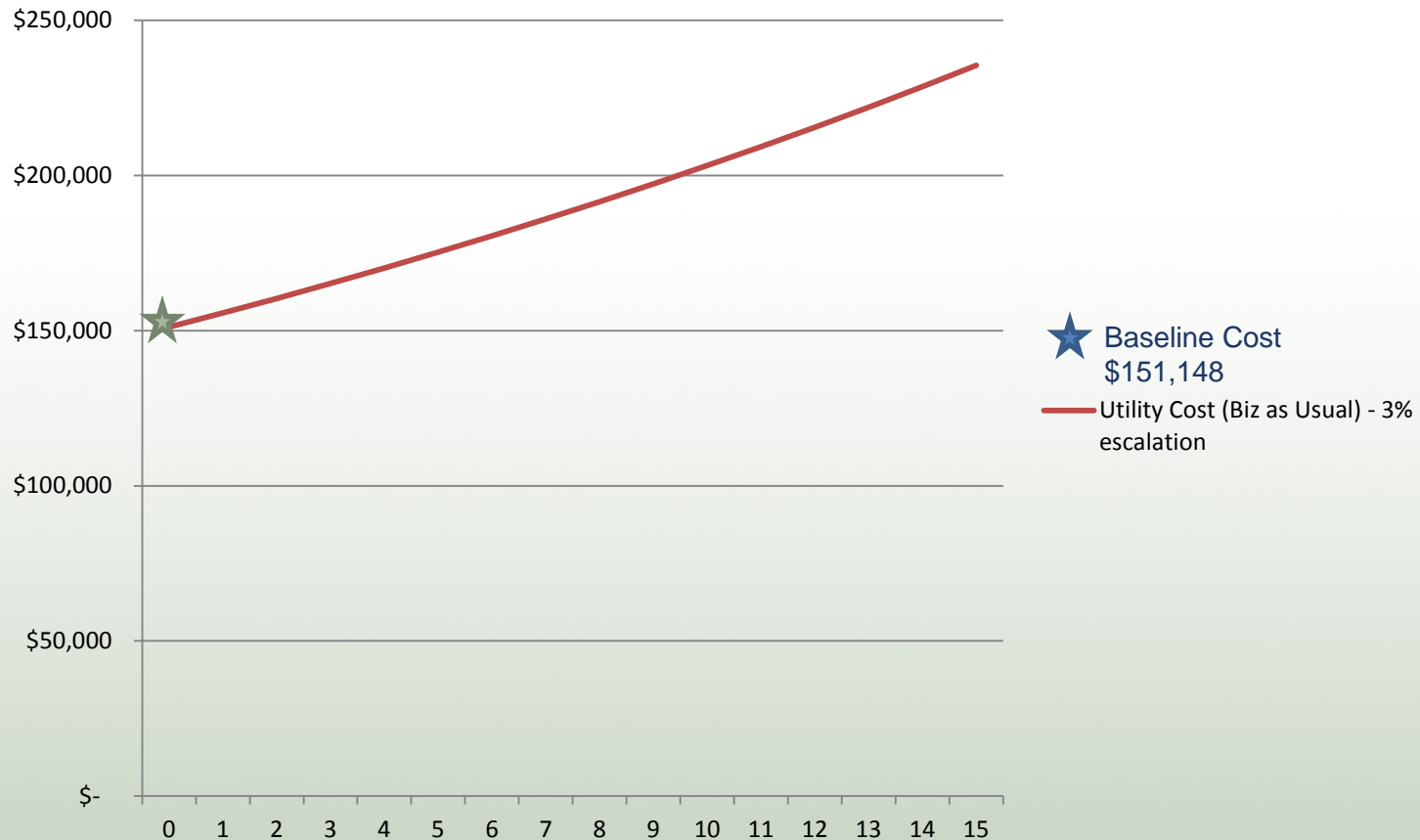


# GESPC Example Governor's Mansion

Based on a September 2011  
Investment Grade Audit



# Governor's Mansion Utility Costs Projected





# ECMs Proposed

Cost Savings Summary By ECM				
ECM	Description	Savings	Costs	Simple Payback (Years)
1	Lighting	\$ 13,084	\$ 65,738	5.02
2	Lighting Controls	\$ 133	\$ 2,057	15.43
4	Pump VFDs	\$ 4,818	\$ 41,151	8.54
10	Rain Water Harvesting & Irrigation Control	\$ 15,670	\$ 85,730	5.47
11	Water side Free Cooling PI & Frame	\$ 1,807	\$ 118,133	65.36
13	Window Film	\$ 154	\$ 24,053	155.83
18	Steam trap Replacement	\$ 1,883	\$ 65,670	34.87
19	VFDs on Cooling Tower	\$ 272	\$ 19,889	73.02
20	Replace Cooling Tower	\$ 3,524	\$ 118,908	33.75
25	Ballroom Occupancy Sensor OA Control	\$ 5,454	\$ 42,865	7.86
26	Eliminate Concurrent Heating/Cooling	\$ 8,607	\$ 34,292	3.98
33	Stand-Alone DHW System	\$ 1,772	\$ 102,877	58.07
<b>TOTAL PROJECT</b>		<b>\$ 57,179</b>	<b>\$ 721,363</b>	<b>12.62</b>

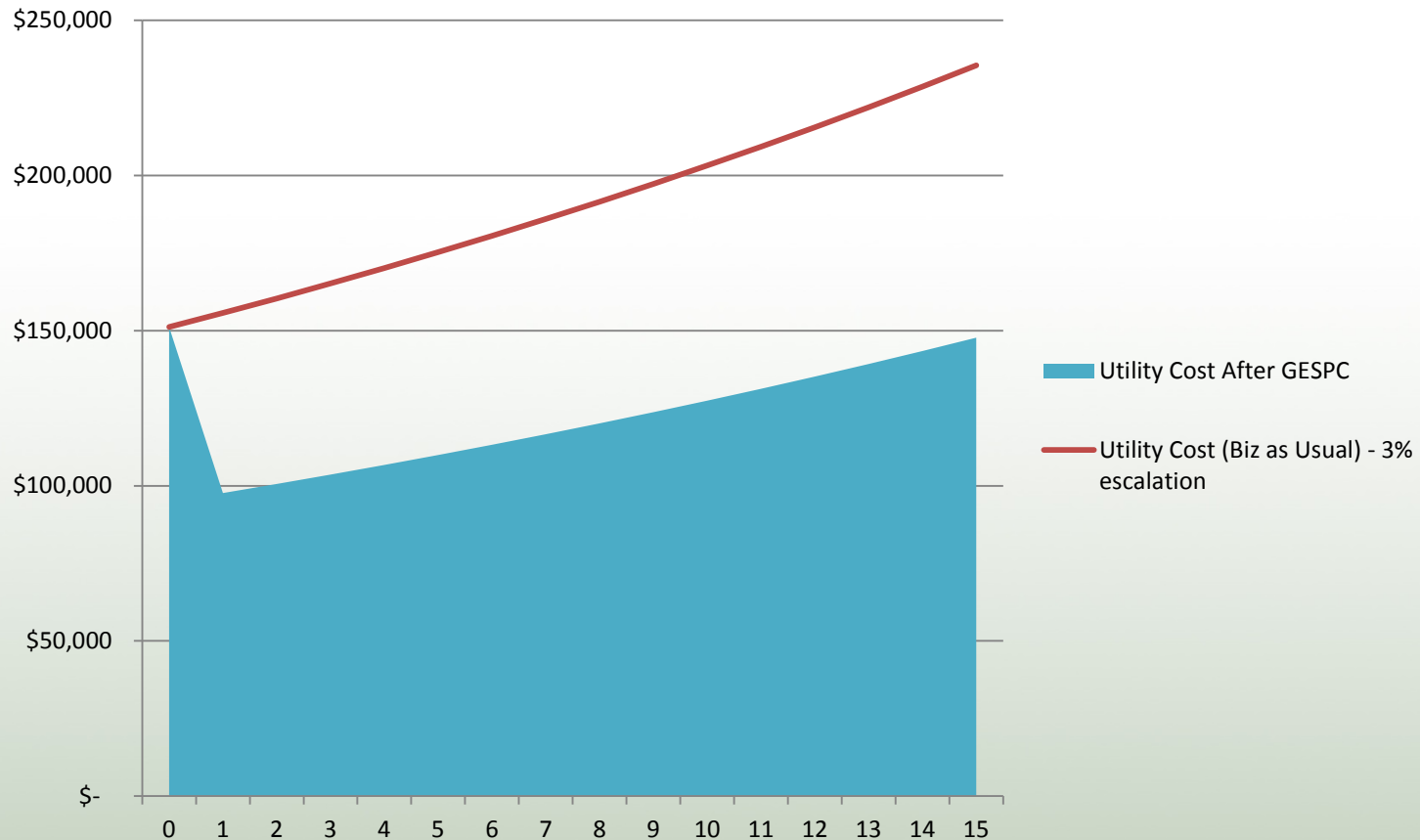
Note: 12.62 yr SPB is financed for 15 yrs.

If you remove ECM 11, 13, 19, 33: Savings = \$53,174 (93%); Costs = \$456,411 (63%); New SPB = 8.58 yrs



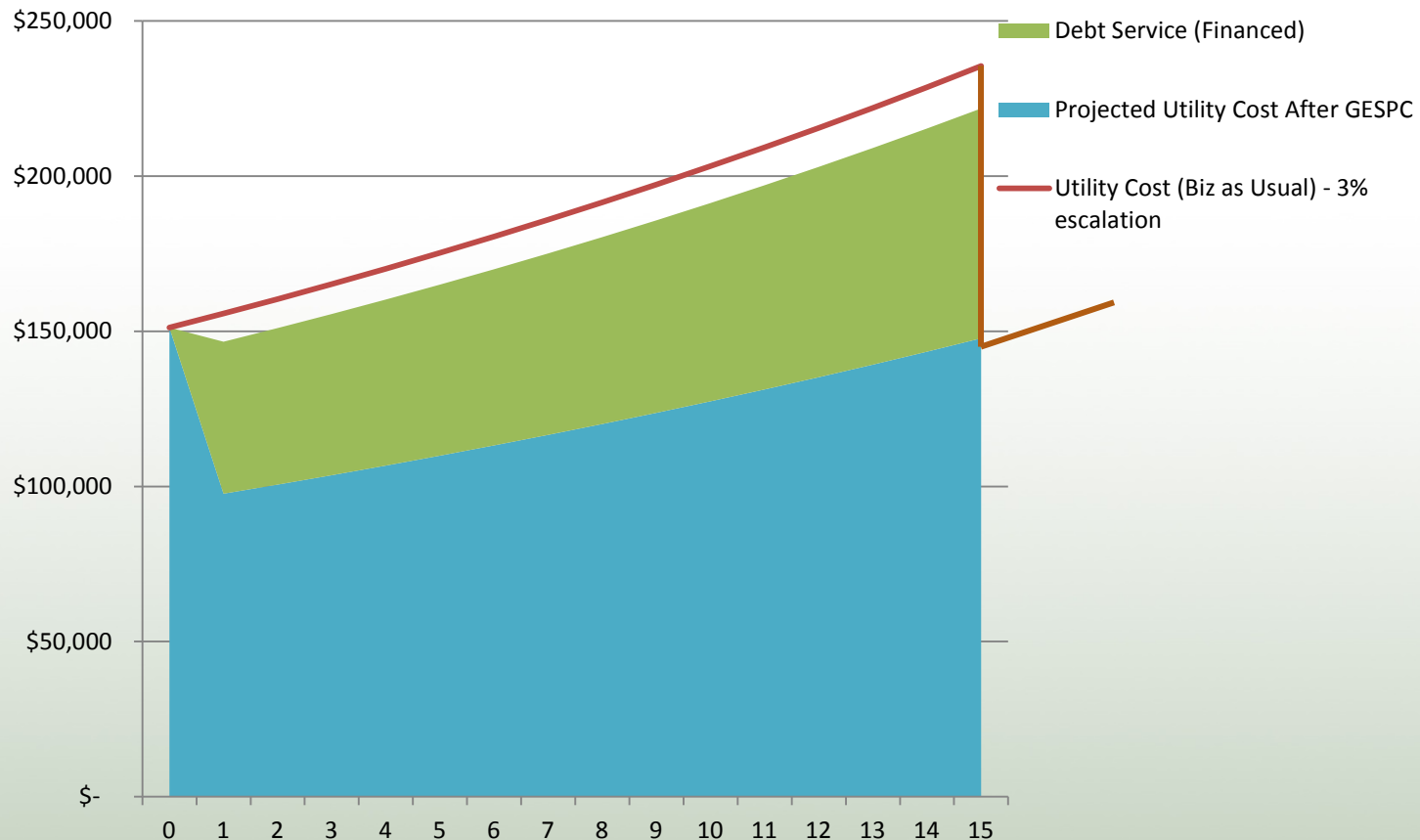


# Governor's Mansion Utility Costs with and without GESPC



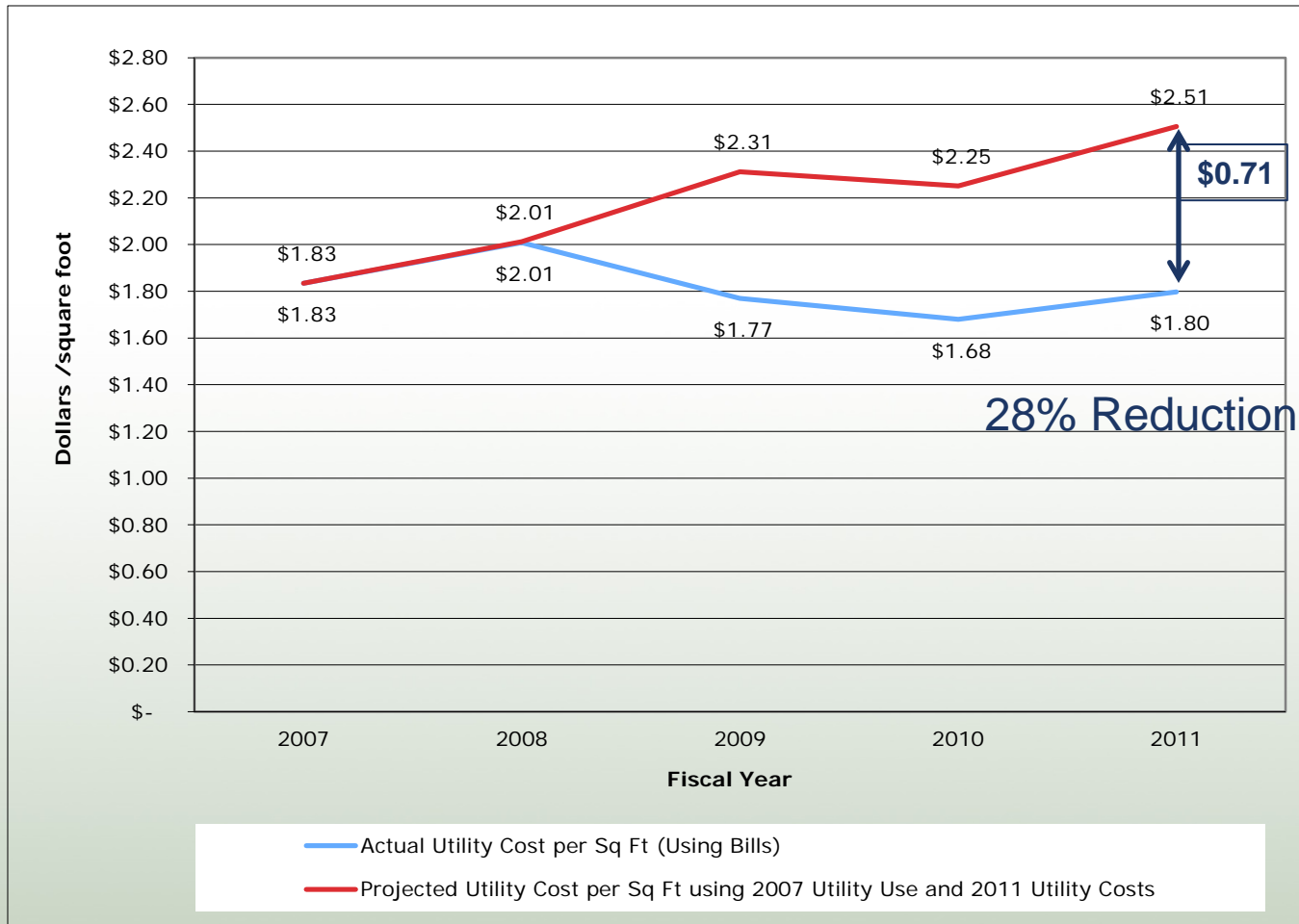


# Governor's Mansion Utility Costs with and without GESPC





# GBA Agency-wide Cost/Sq Ft



**\$3.26M =**  
**\$0.71/SqFt x**  
**4.60 M SqFt**

(4.60 M Sq Ft is  
2011 figure and  
excludes DOT  
bldg)



# GA ESA Section 5.2

## Annual Review and Guaranty Payment

- Within (            ) business days following the close of each fiscal year during the Contract Time for Verified Savings, ESP shall
  - (1) perform an Annual Review of the Verified Savings in accordance with the methods and procedures in Schedule M [Measurement and Verification Plan], and
  - (2) provide a written report of the Annual Review to Owner. If any Annual Review reveals that the Verified Savings do not equal or exceed the Guaranteed Savings for such fiscal year, then in accordance with ESP's guaranty obligations of Section 5.1, ESP will pay Owner the difference between (a) the Guaranteed Savings and (b) the Verified Savings. Such payment shall be made to Owner no later than the date that the written report of the Annual Review is due.
- Owner may dispute the findings of the Annual Review and the amount due Owner under this Section at any time. Owner's receipt and deposit of any payment due under this Section shall not affect Owner's right to dispute the findings of the Annual Review or the amount due Owner under this Section.
- Any excess of Verified Savings over Guaranteed Savings in a fiscal year shall not be used to offset deficiencies of Verified Savings in comparison to Guaranteed Savings in other fiscal years.



## GA ESA 2.2 - Measurement and Verification

- ESP shall measure and verify the Verified Savings resulting from the ECMs in accordance with the Methods of Savings Measurement and Verification set forth in **Schedule M**. At a minimum, the methods identified in Schedule M shall comply with the most recent version of the **International Performance Measurement and Verification Protocol** or other industry engineering standard (as such term is defined in the Act), but only if Owner consents to such other industry engineering standard.



# M&V (from IPMVP)

- “Measurement & Verification (M&V) is the process of using measurements to reliably determine actual saving created within an individual facility by an energy management program.”
- Can One Measure Savings?
  - Savings are the absence of energy use.
  - We can *not* measure what we do not have.
  - We do *not* ‘measure’ savings.
  - We *do* measure energy use.
  - We *analyze* measured energy use to **determine** savings.



# Risks in EPC

M&V is a risk management tool. Areas of risk in EPC:

1. Accuracy of savings forecasts
2. Implementation effectiveness
3. Maintenance of performance
4. Accountability

## **Accuracy of savings forecasts**

- Unknown existing performance (baseline)
- Uncertainty in how retrofits will perform
- Unknown future conditions

***Mitigation:*** establish a culture of proof, require the M&V plan be developed as part of audit; un-provable ECMs will not be recommended



# Risks in EPC

## Implementation effectiveness

- the design, construction or commissioning may not fully implement the energy auditor's vision for savings.
- even design review, construction inspection, commissioning do not expose shortcomings in results.

**Mitigation:** *Develop and apply an M&V Plan to spot shortcomings in energy results.*

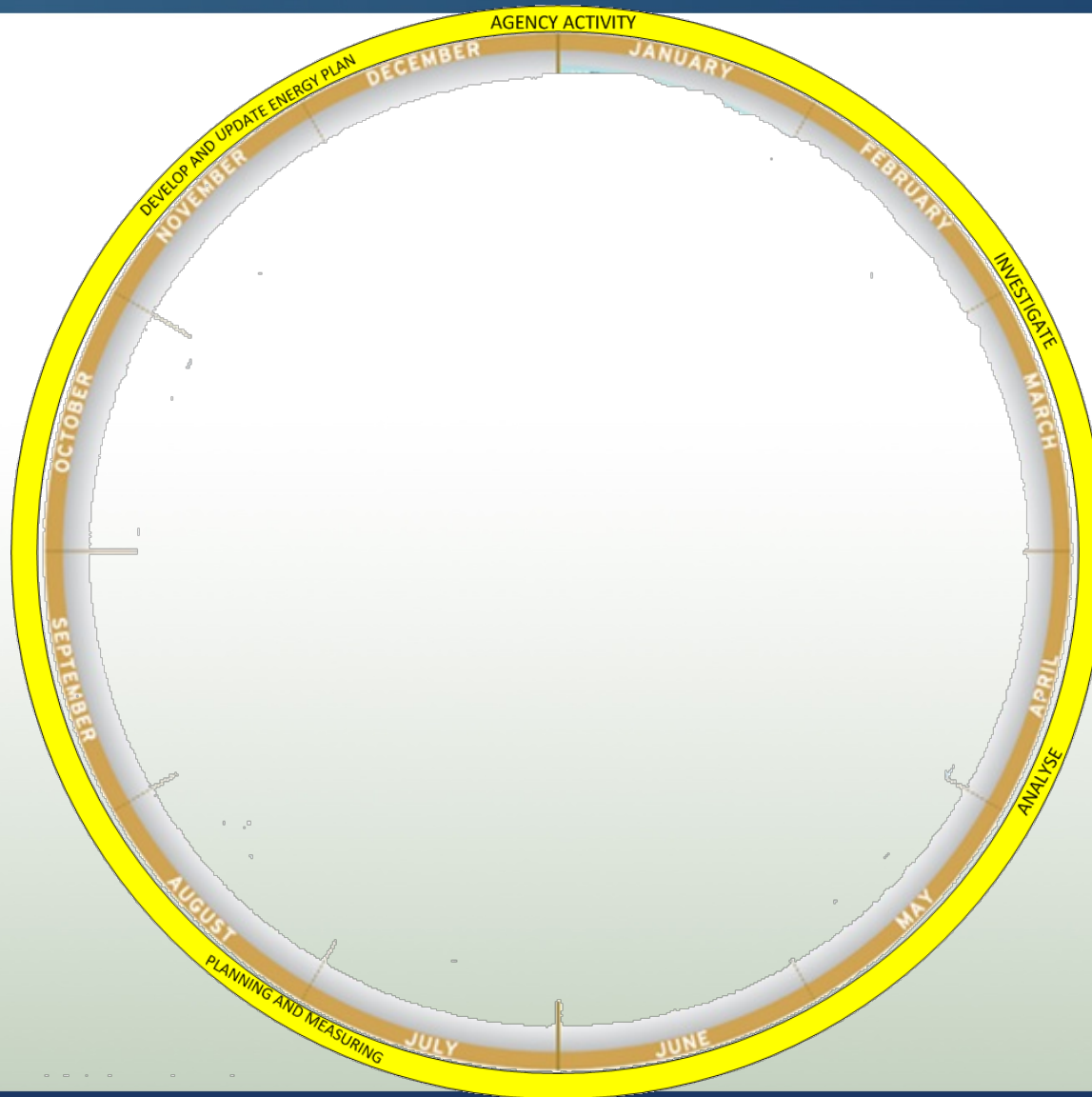
## Maintenance of performance

- Operating staff, or controls, may forget new energy efficient methods.
- Equipment may deteriorate and reduce savings.
- Energy increases from unrelated events may hide savings.

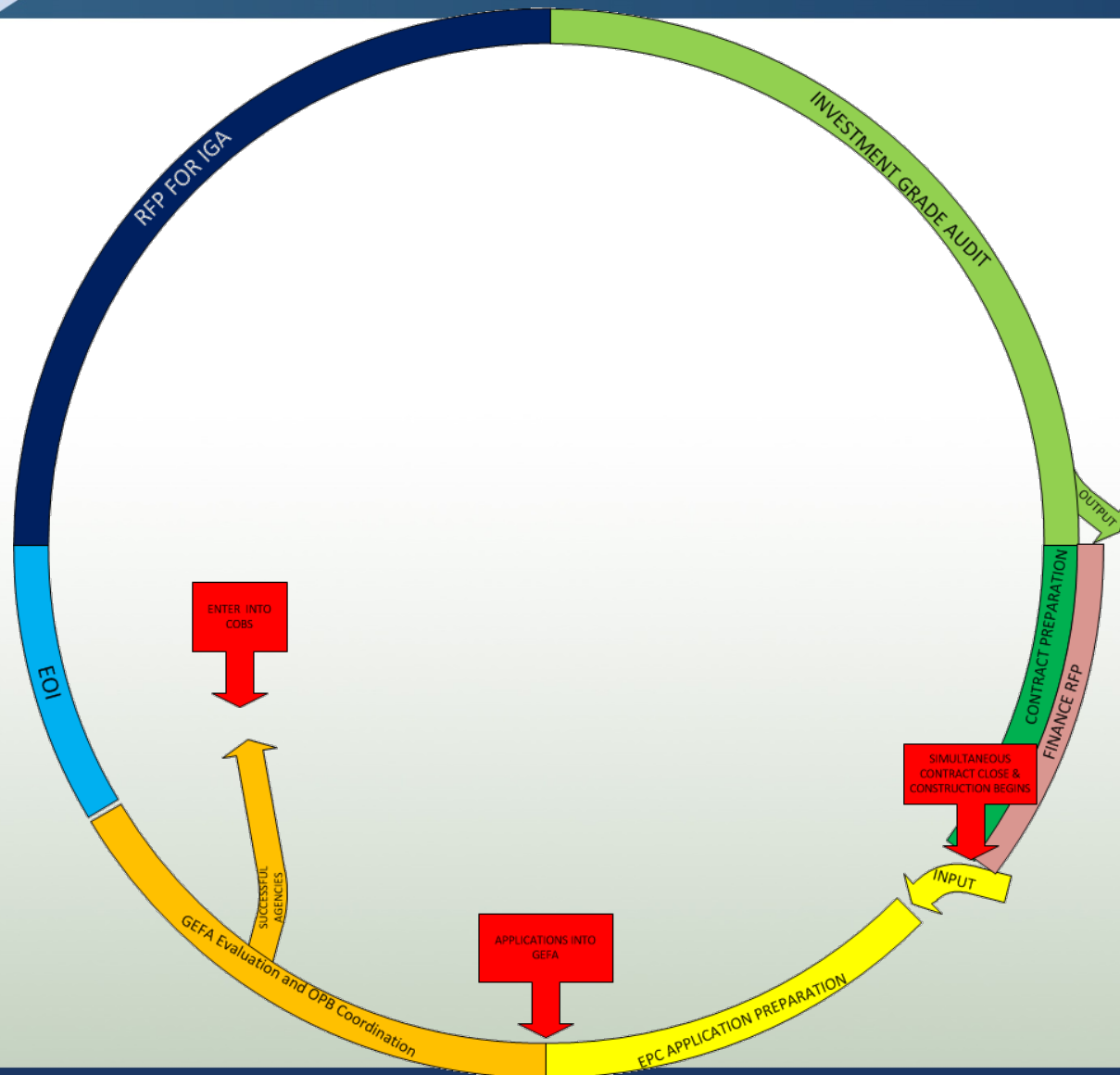
**Mitigation:** *Perform M&V to inspire corrective action.*



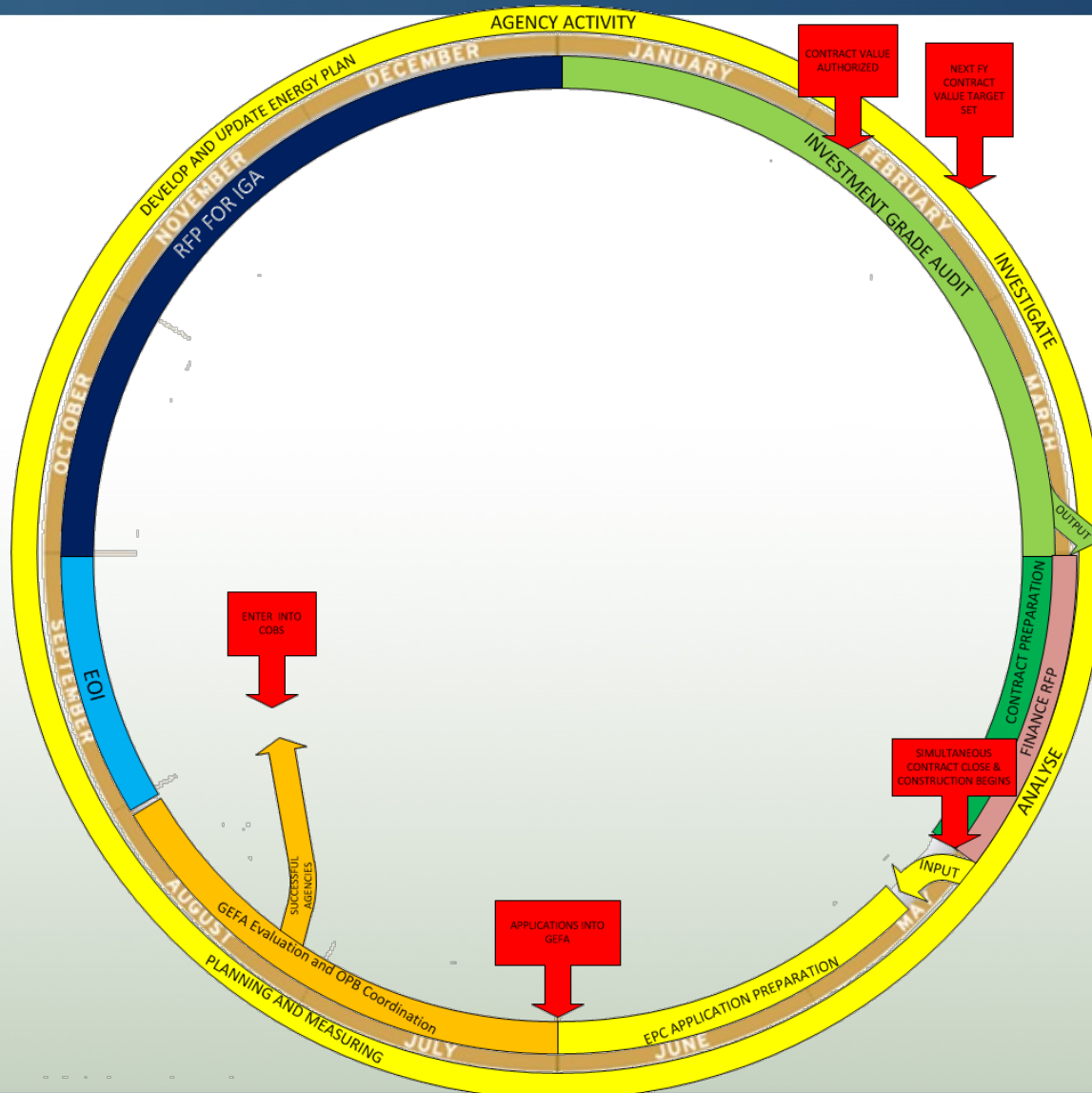
# Energy Management Planning



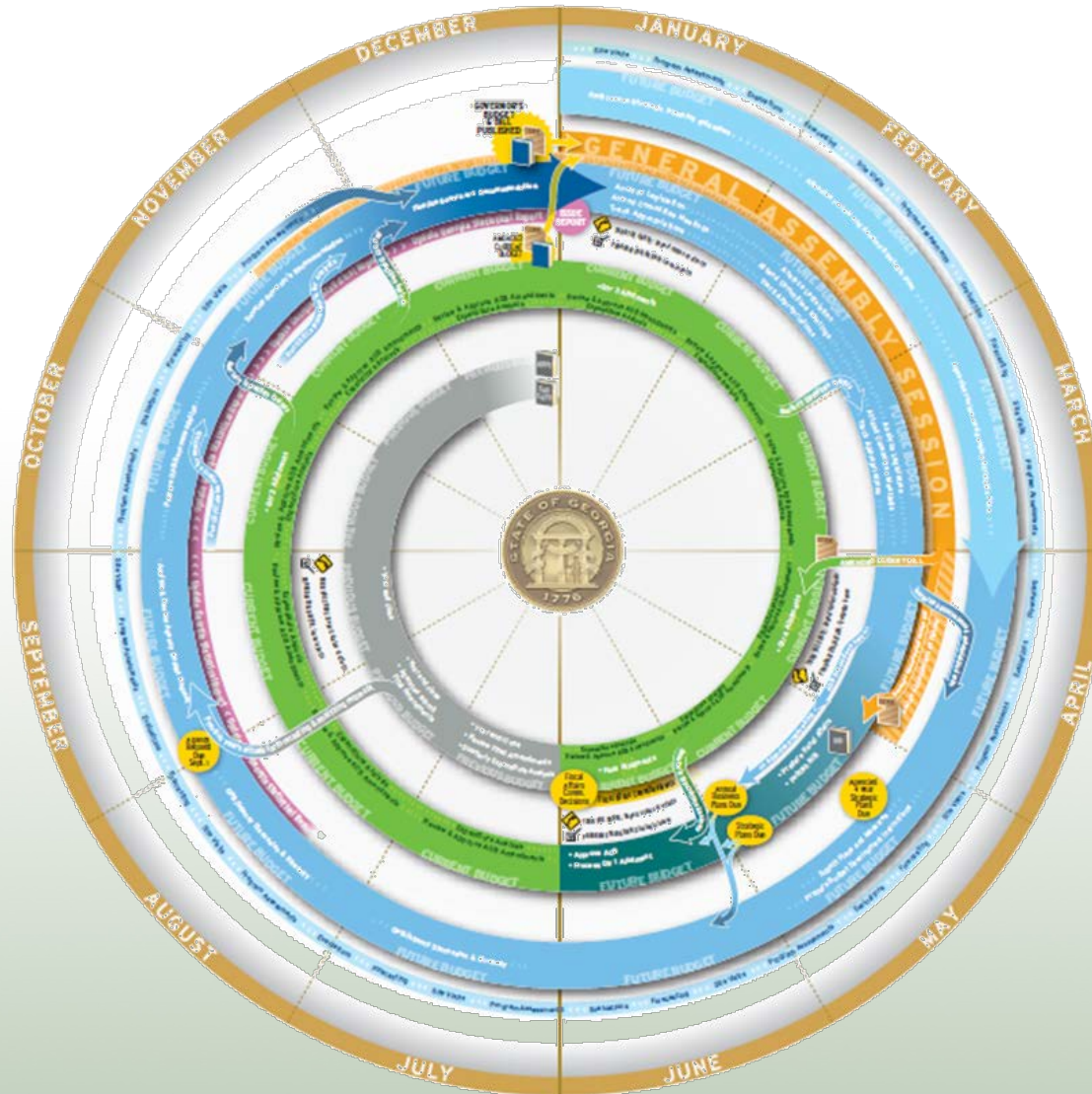
# EPC Process



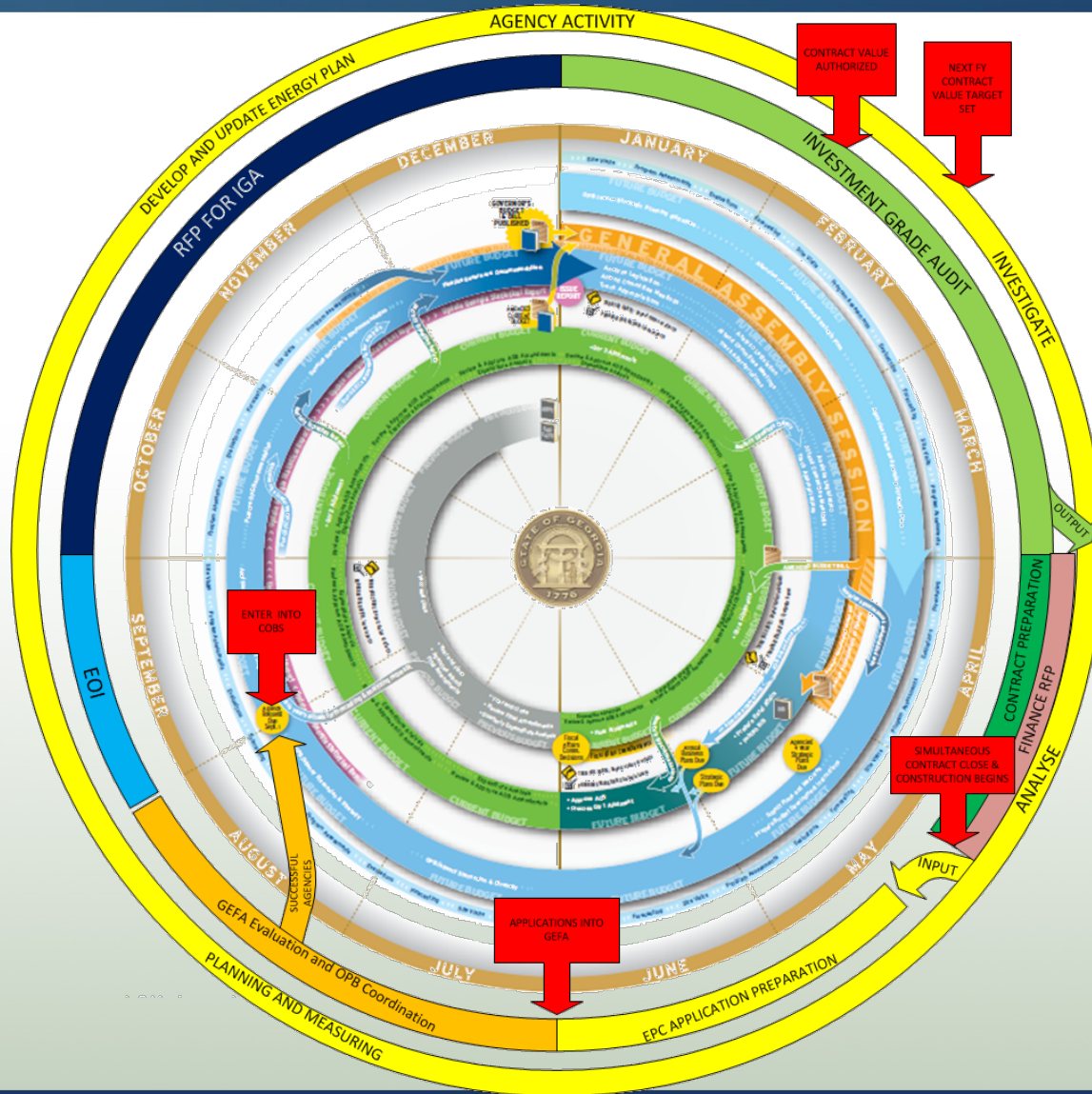
# Planning and EPC Process



# Budgeting Cycle



# Planning, EPC & Annual Budget





# Benefits

- Contractually guaranteed & measured savings
- Integrated project analysis, design, and construction
- Long term monitoring of savings and performance
- Up-to-date training for facility operating personnel
- Services and materials based upon quality and life cycle value, rather than on lowest first cost



# Energy Performance Contracting

For FY15 (starting 7/1/14) How much and to which agencies?

- \$80 Million Total Contract Value
- Applications from 4 Agencies and 2 Authorities
- Board of Regents
  - UGA Athens – East Campus: 8 Buildings, \$3.6M
  - GIT – VFD on Chillers, \$5.7M
- Department of Corrections – 11 Facilities, \$26.0M
- Department of Juvenile Justice – 7 Facilities, \$2.8M
- Department of Transportation – 176 Buildings, \$11.2M
- Georgia World Congress Center – 4 Buildings, 3.9M sq. ft. \$25.6M
- North Georgia Mountains Authority – 6 Resorts, \$4.6M

# Program Requirements

- GEFA approves GESPC applications
- Confirm with SPC that building will be utilized for length of GESPC
- Provide data on known and anticipated debt (obligations)
- Enter project information into COBS
- Get Contract approved by GEFA





- GEFA
  - Process Advisor
    - Manual and Sample Documents
  - Technical Advisor
- GSFIC
  - Financial
    - Debt considerations
    - 3<sup>rd</sup> Party Financing
  - Construction
    - Procurement
    - Design Review
    - Project Management
- OPB
  - AOB
  - COBS
- Third Party
  - Technical review



# How to Prioritize Work

- Mission
- Need
- Benefit
- Multi-year Energy Plan
- Georgia Energy Challenge
- GESPC Planning





# Questions?



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