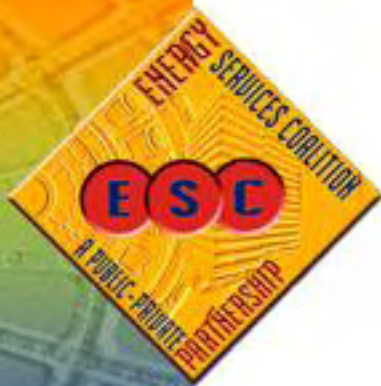


# 1<sup>st</sup> Course: “Meat and Veggies”

*(You must eat your meat and veggies first)*

*Energy Efficiency delivers the biggest environmental return and provides cost savings that can be used to pay for the investment through a performance contracting approach*

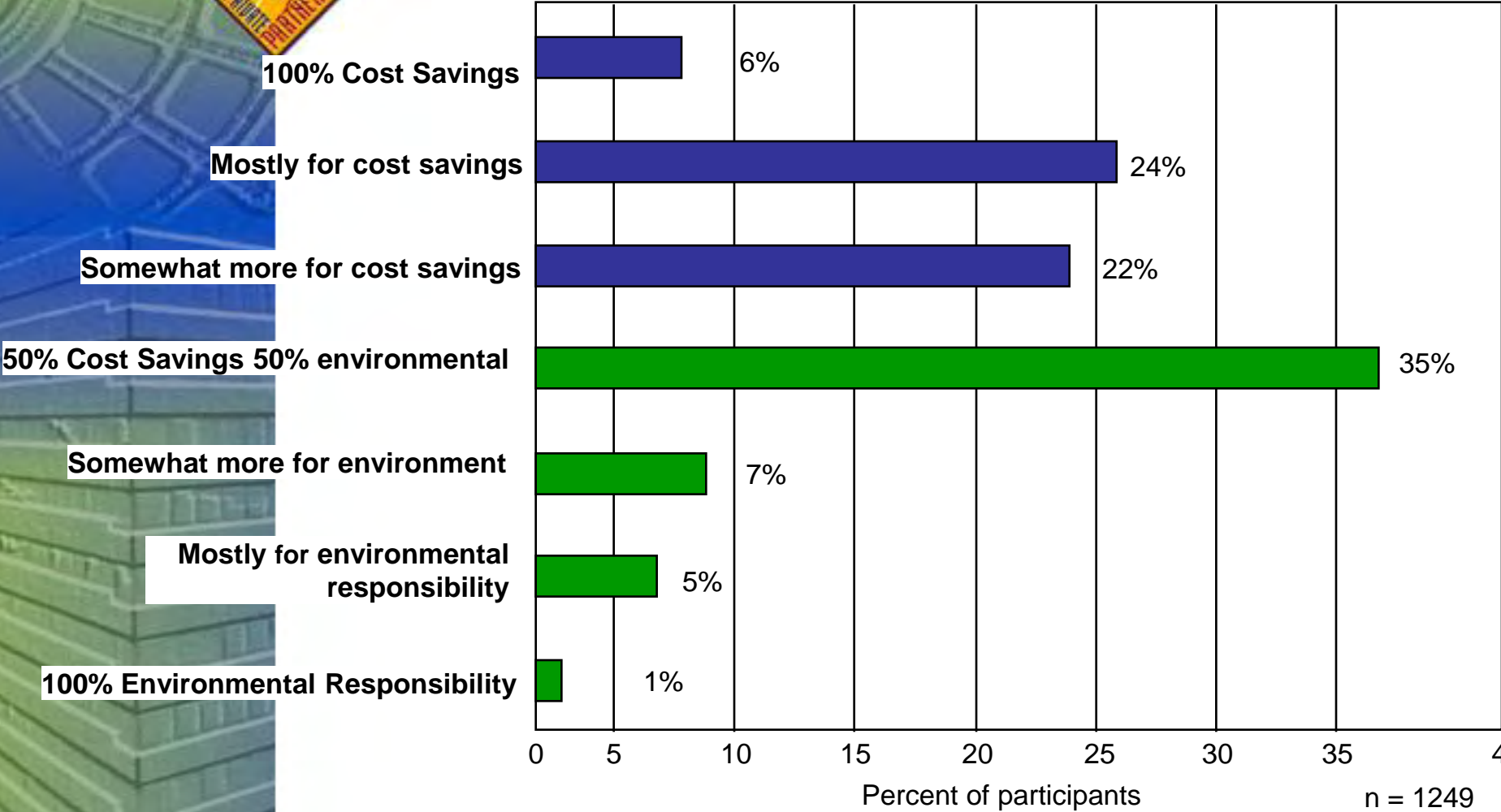


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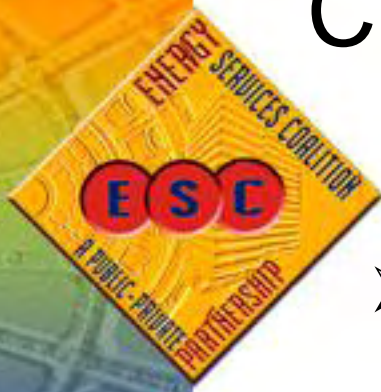
Oscar Rangel:

Why are we here?

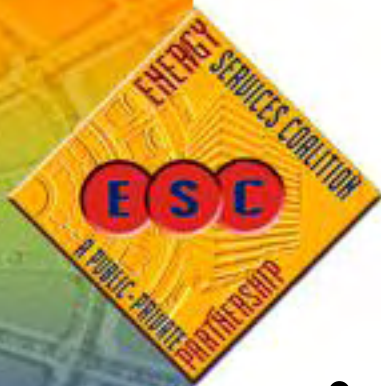
# What we are saying about PC



# Current Colorado Challenges



- Tight budgets
- Limited resources
- More projects than available funding
- Aging infrastructure
- Pressures to focus on energy & water conservation
- Interest in renewable energy



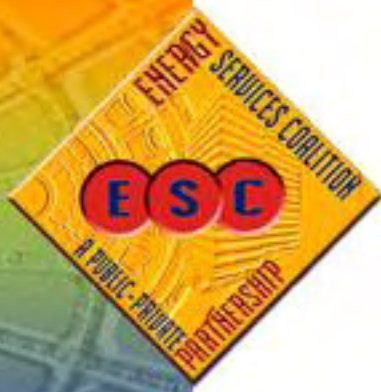
# Economic Drivers

- Cost of Utilities
- Decrease in tax revenues
- Decrease enrollment
- In house vs. ESCO
- Accelerate Improvements
- Fund Renewable

# Typical Improvements



- Upgrade to healthy High Performance Green Building
- HVAC Upgrades
- Lighting systems
- Insulation
- Renewable energy (PV, Solar Thermal, Geothermal, Wind, Biomass, LFGTE, etc.)
- Retro commissioning
- Traffic and Street lighting
- Education
- Fuel Switching and Alternative Fuels
- Vending power management
- Computer power management
- Preventive Maintenance
- Water & Wastewater Infrastructure Optimization
- Mechanical meter replacement and automated meter reading
- Distributed Generation, Cogeneration and Central Plants



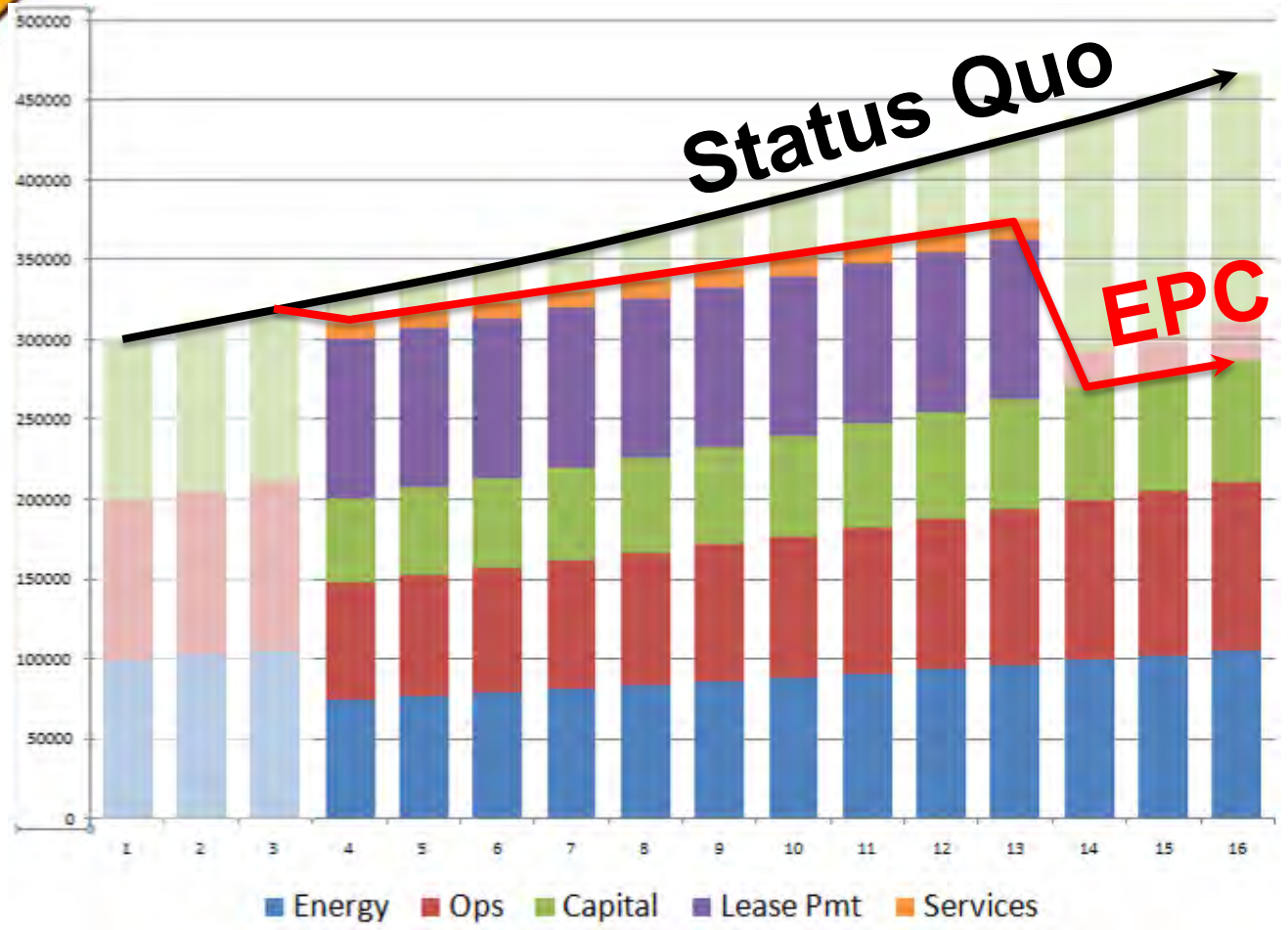
Jeff Schuster: *What is EPC?*

# What is Energy Performance Contracting (EPC) ?

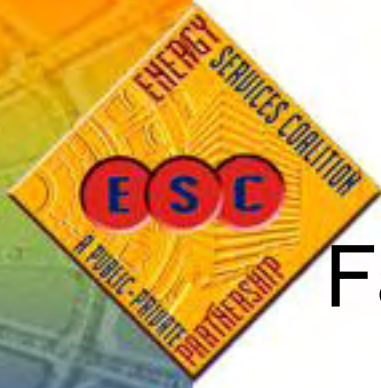


*The process of leveraging guaranteed future cash savings from energy and operational costs to invest in facility improvements right now.*

# What is EPC ?



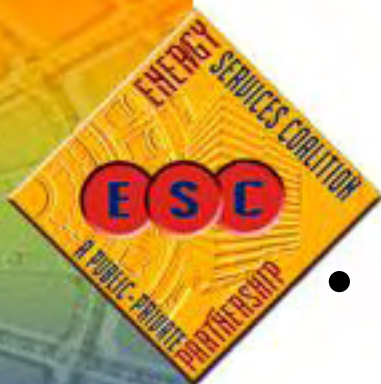
# What do you get ?



## Facility improvements

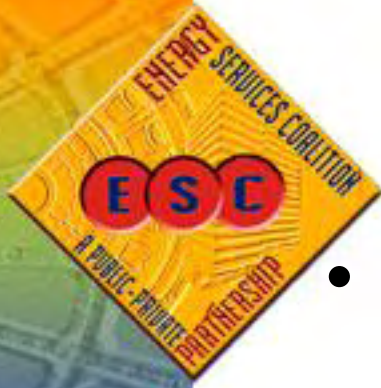
- Upgraded heating & cooling
- Lighting retrofits
- Windows & roofs
- Modernized controls
- Guaranteed results

# Misconceptions



- Myths
  - Shared-savings
  - Increase debt
  - Sacrifice comfort
  - Firm restrictions
- Safeguards
  - Guaranteed results
  - GEO – Pre-qualified ESCOs

# Options



- Financial Flexibility
  - Quick payback
    - \$1,000,000 w \$150,000 / yr savings
  - Facility investment
    - \$2,500,000 w \$80,000 / yr savings
- Align with core mission
  - Education
  - Municipal services

# Measurement & Verification

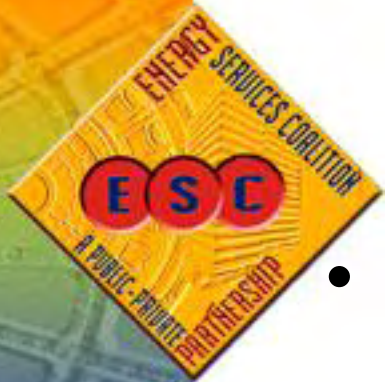


- Know savings is occurring
  - International Performance Measurement & Verification Protocol (IPMVP)
  - One-time measurement
  - Whole building tracking
  - Third-party verification



John McAllister: *How to do it...*

# How to -Energy Performance Contracting (EPC)



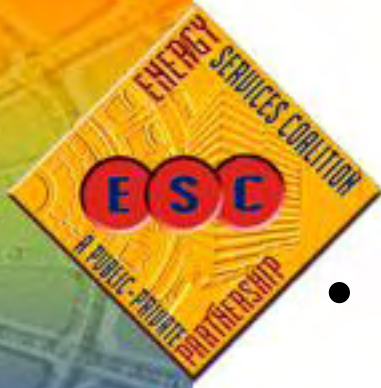
- Leverage of energy efficiency
- For every \$ of savings
- \$7 can be financed over 12 years
- Range of Leverage on projects with other financing (grants, utility incentives, etc) =
  - \$7 to \$30

# How to -Energy Performance Contracting (EPC)



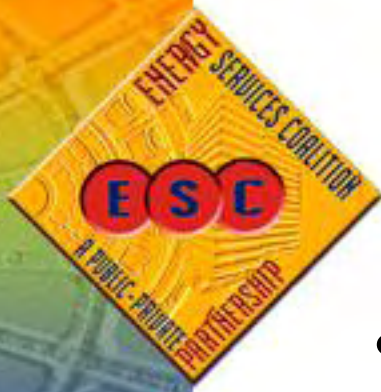
- Constituents & Stakeholders
- Resources and Opportunities
- Staff Resources
  - Managers
  - Technical/operations
  - Financial
  - Champion
- External Resources (GEO, ESCOs, consultants, etc)
- Needs Assessment

# Needs Assessment



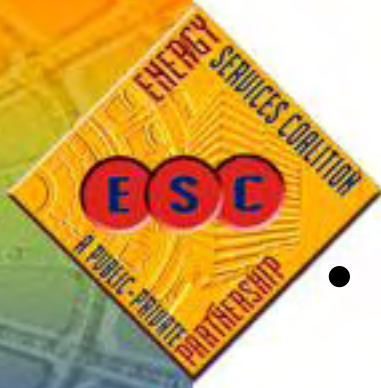
- Perform Assessment
  - Internal
  - Contracted
  - GEO assist
  - ESCO
- Facilities and Grounds
- Fleets
- Operations

# Benchmarking



- Facilities
- Energy Use (btu/sf)
- Energy Cost (\$/sf)
- Greenhouse gases
- Vehicle Fuels (mpg)
- Water

# ESCO Selection



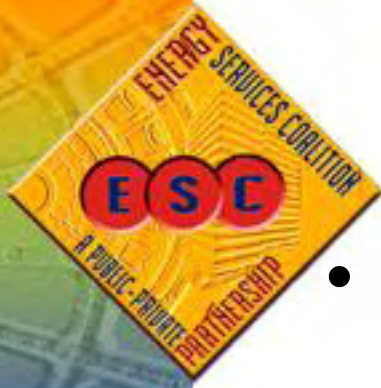
- GEO program and MOU
- Technical Energy Audit
- Implementation
- Commissioning
- Measurement and Verification
- Training
- Maintenance management
- Annual Reviews and Reports

# Financing



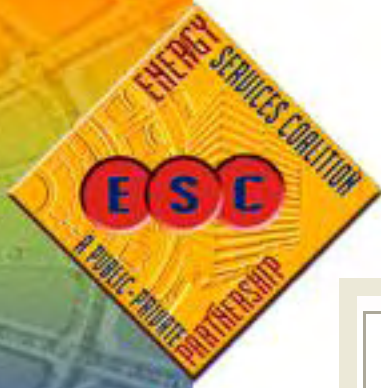
- Tax Exempt Lease Purchase
- Grants (Public and Private)
- Capital Reserve
- Bonds-Revenue and GO
- Incentives
  - Utility Rebates (Electric-Nat Gas-RCx)
  - GEO programs
  - Renewable Rebates
  - Renewable Energy Credits (RECs)

# Results



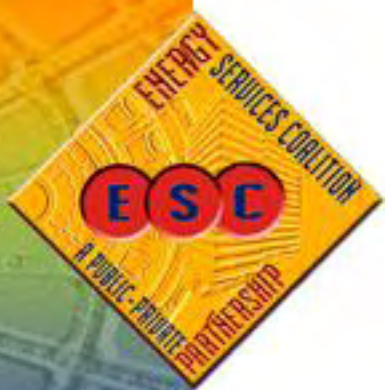
- Celebrate the benefits
  - Monetary (lower utility costs)
  - Comfort/productivity
  - GHG
- Promote / Inform
- Reporting
- Sustainable savings

# Results



**Your Energy Efficiency Efforts Will Also Result  
in the Following Pollution Reductions:**

Type of Pollution	Amount of Reduction per Year
Greenhouse Gases (CO <sub>2</sub> )	2,958,800 Pounds
Nitrogen Oxides (NO <sub>x</sub> )	3,811 Pounds
Sulfur Dioxide (SO <sub>2</sub> )	2,069 Pounds
Toxic Metals Pollution	Amount of Reduction per Year
Mercury (Hg)	4,376 Milligrams



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# Questions & Answers