

PENNSSTATE



Facilities Engineering Institute

GUARANTEED ENERGY PERFORMANCE CONTRACTING AND



***The Pennsylvania Guaranteed
Energy Savings Act***

1. What is a Project Delivery System?
2. Comparison of two types of Project Delivery Systems
3. Guaranteed Energy Savings Contracting (GESCC) and Energy Service Companies (ESCOs)
4. The Pennsylvania Guaranteed Energy Savings Act (GESA)
5. What to look for during your GESA project
6. Wrap-up



Project Delivery Systems



- What are “Project Delivery Systems”?
 - Methods used to describe working relationship between owner, designer, and builder to carry out design and construction of a project.

Factors affecting choice of Project Delivery System:

- Complexity of design
- Desire for flexibility during construction
- Availability of suitable contractors
- Expertise and availability of owner
- Ability to define scope of project
- Performance requirements of completed project
- Budget constraints



Let's look at two Project Delivery Systems:



- 1. Design-Bid-Build contracting***
- 2. Performance contracting***



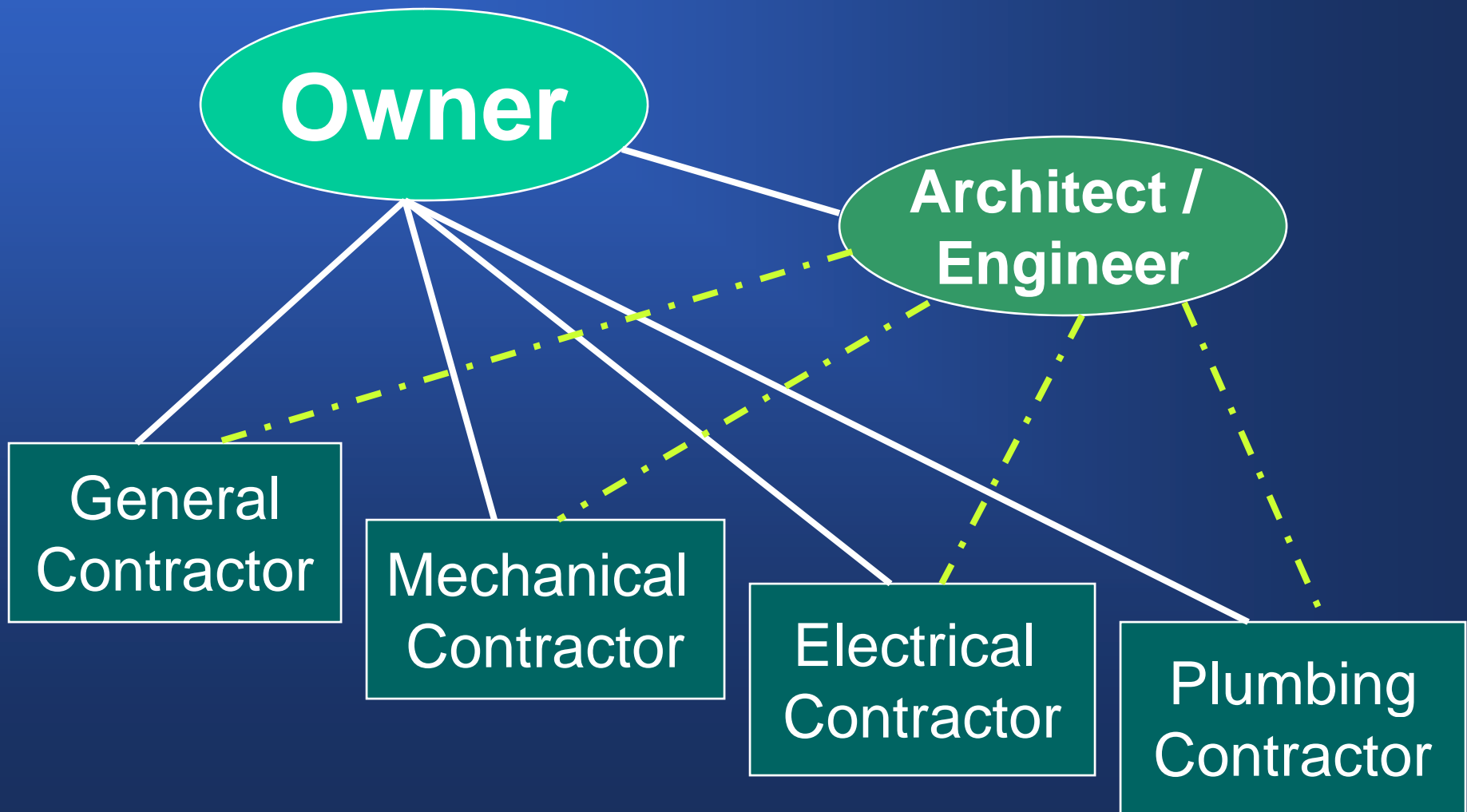
Let's look at Design – Bid – Build.

What is it?

- ▶ *Design-bid-build is a project delivery method in which the agency or owner contracts with separate entities for the design and construction of a project.*
- ▶ *Design-bid-build is the traditional method for project delivery.*
- ▶ *Three sequential phases to design-bid-build:*
 - 1. Design phase*
 - 2. Bidding phase*
 - 3. Construction phase*



1. Design – Bid – Build



Advantages of Design – Bid – Build:

- Familiarity; it's common.
- Owner gets a contracted project price.
- Good price competition: low bid.
- Plans and Specs for quality standards.
- Defined legal and procedural guidelines.





Disadvantages of Design – Bid – Build:

- Contractors have no input into design phase
- No project fast-tracking
- Scope change complications
- Conflicts from interpretation of contract documents and unforeseen conditions
- Limited collaboration between owner, designer, and contractor is common
- *Requires high degree of owner involvement for success.*

Design – Bid – Build.....When?

- When fast-tracking is not an issue
- Firm budget and available funds
- Well-defined project
 - Owner knows what he/she wants
- When required by governing body.

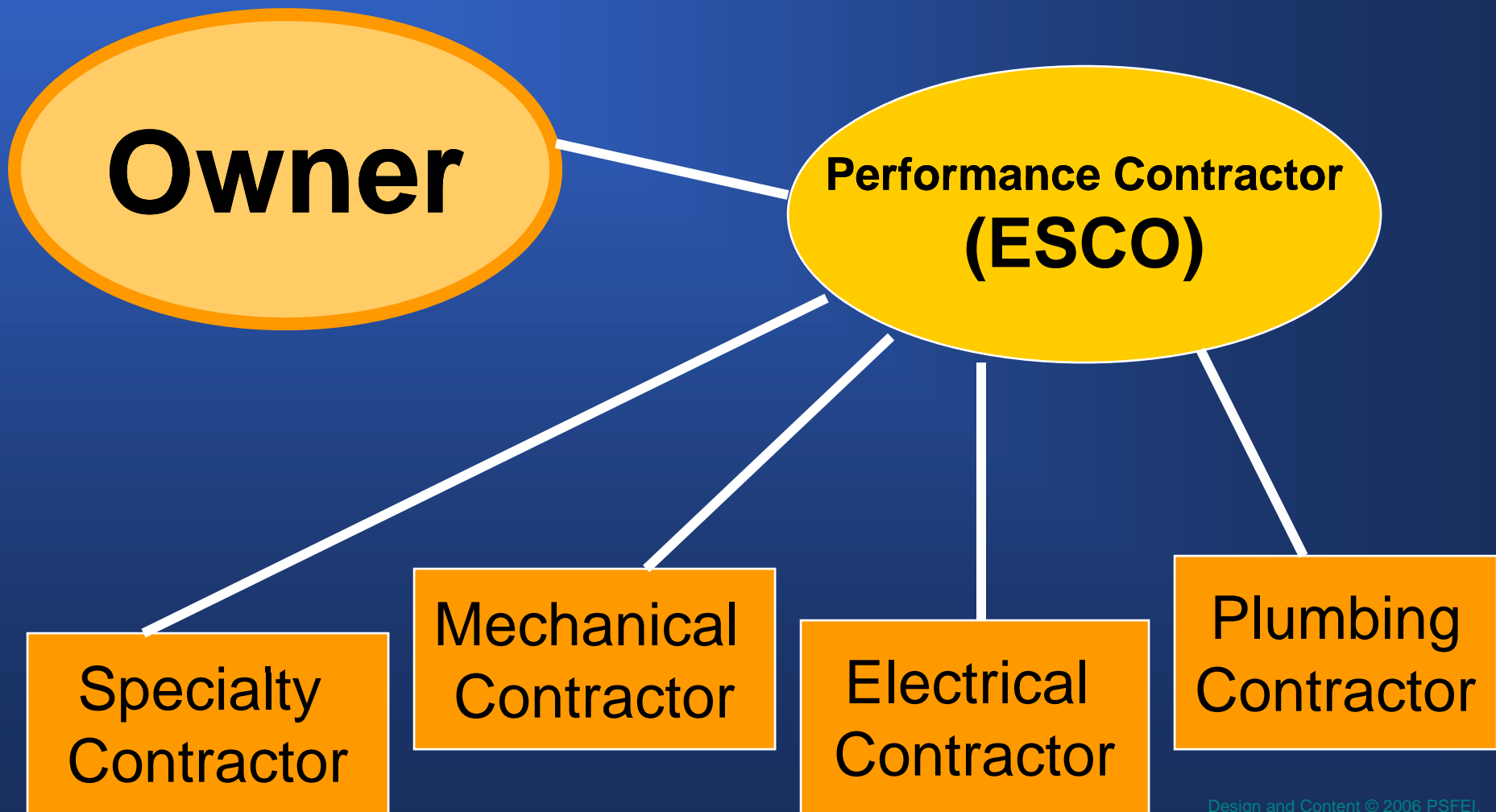


What is PERFORMANCE CONTRACTING?

- A project delivery system that specifies and guarantees end results desired rather than specific details of how a service should be delivered.



2. Performance contracting



Advantages of Performance Contracting:



- Collaboration between owner, designer, and builder
- Encourages project constructability
- Value-engineering approach
- Ability to fast-track
- Good cost estimating and scheduling
- Scopes of work are negotiated
- One responsible entity: Performance Contractor (ESCO).



Disadvantages of Performance Contracting:

- No firm project cost at initial stages
- No system of “checks & balances” without plans, specs, contract documents
- *Owner involvement necessary for project success.*

Performance Contractswhen?

- Fast-tracking
- Performance contractor specialty skills (example: ESCO)
- *Owner has limited staff and/or expertise*



What is an Energy Performance Contract?



- A contract for comprehensive energy / water efficiency and operational improvements
- Energy / water / operational cost savings pay for the improvements.
- Savings are contractually guaranteed; thus called **GUARANTEED ENERGY SAVINGS CONTRACTS.**

Guaranteed Energy Savings Contracting?



- Guarantee can be structured to cover ALL project costs (energy audits, design fees, ongoing fees, financing costs, equipment, materials, construction).
- Carried out by a qualified “**ESCO**”.

What's an ESCO?

- **Similar to a Design/Build firm**
- **Turnkey service for energy efficiency projects**
- **Expertise in energy engineering**
- **May also offer any or all of these:**
 - **Financing**
 - **Commissioning**
 - **Training**
 - **Maintenance**
 - **Monitoring.**





Types of ESCOs:

1. Equipment-based companies
2. Independent service companies
3. Utility-based companies
4. International energy companies.



The basics of how GESOC works:

- Competitive selection of ESCO
- Enter into agreement with ESCO
- ESCO performs energy audit
- ESCO / Owner identify energy / water conservation measures, or “ECMs”
- ESCO designs and constructs
- Energy / water / operational cost savings from ECMs pays for project.

**Example:**

YOUR
UTILITY COST =
\$500k / YEAR

ESCO guarantees he can cut your
utility costs by \$100,000 / year

You and ESCO agree
ESCO will be paid \$1M for
performing work that will
reduce your annual utility
bill by \$100,000 / year

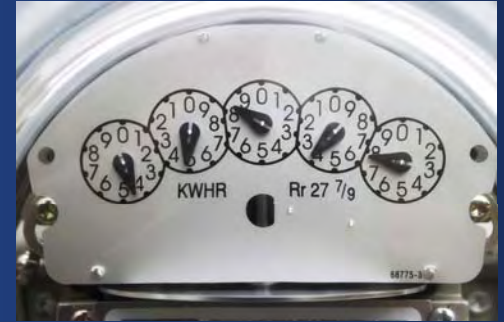
After ESCO completes construction
work, you use avoided utility costs
to pay ESCO bill off in 10 years:

10 years x \$100k savings/year = \$1M

***After 10 years, you now enjoy utility savings
of \$100k per year.***



Benefits of GESCs:



1. Reduced energy/water costs
2. Reduced environmental impact
3. No upfront capital requirement
4. Access to 3rd party financing
5. Transfer of risk from owner



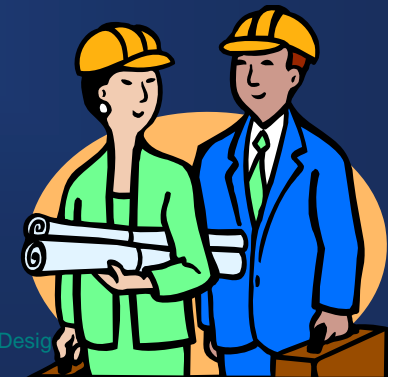
Additional Benefits of GESCs:

6. Improve building performance
7. Better management & control of facility
8. Decrease equipment repairs lowers maintenance costs
9. Replace aging equipment



Still more benefits of GESCs:

10. Improved occupant comfort & productivity
11. Local economy benefits via ESCO's use of local subcontractors
 - *Can select subs based on quality, value, and experience.*
12. Owner staff training.



Risks of GESCs:

- **Long-term relationship with ESCO**
 - Single source, loss of flexibility
- **Not suitable for smaller projects due to high transaction costs**
 - *engineering, management, monitoring costs*
- **Owner involvement in long-term oversight, measurement, verification.**





Contract-type Comparison

<h2>Design, Bid, Build</h2>	<h2>Guaranteed Energy Savings Contract</h2>
<p>May take years to secure funds for comprehensive energy project</p>	<p>All funds readily available</p>
<p>High staff costs due to piece-meal approach to managing several projects</p>	<p>Lower staff cost and quicker completion of comprehensive project</p>
<p>Energy savings are not guaranteed.</p>	<p>Long-term energy savings are guaranteed by the ESCO.</p>



Contract-type Comparison

Design, Bid, Build

Multiple contracts with multiple vendors.

No direct incentive for staff to reduce energy costs.

Energy projects compete for limited budget funds.

Guaranteed Energy Savings Contract

One contract with single point, accountable for project performance.

ESCO compensation tied to energy savings over contract term.

Energy projects funded with utility bill savings.



Contract-type Comparison

Design, Bid, Build

Equipment selection is usually lowest first-cost

Plan & Spec requires rigid design

Limited staff or lack of expertise puts project performance at risk.

Guaranteed Energy Savings Contract

Equipment selection is best value life cycle cost.

Design-build produces flexible and innovative design solutions.

ESCO provides ongoing technical expertise to ensure project performance.



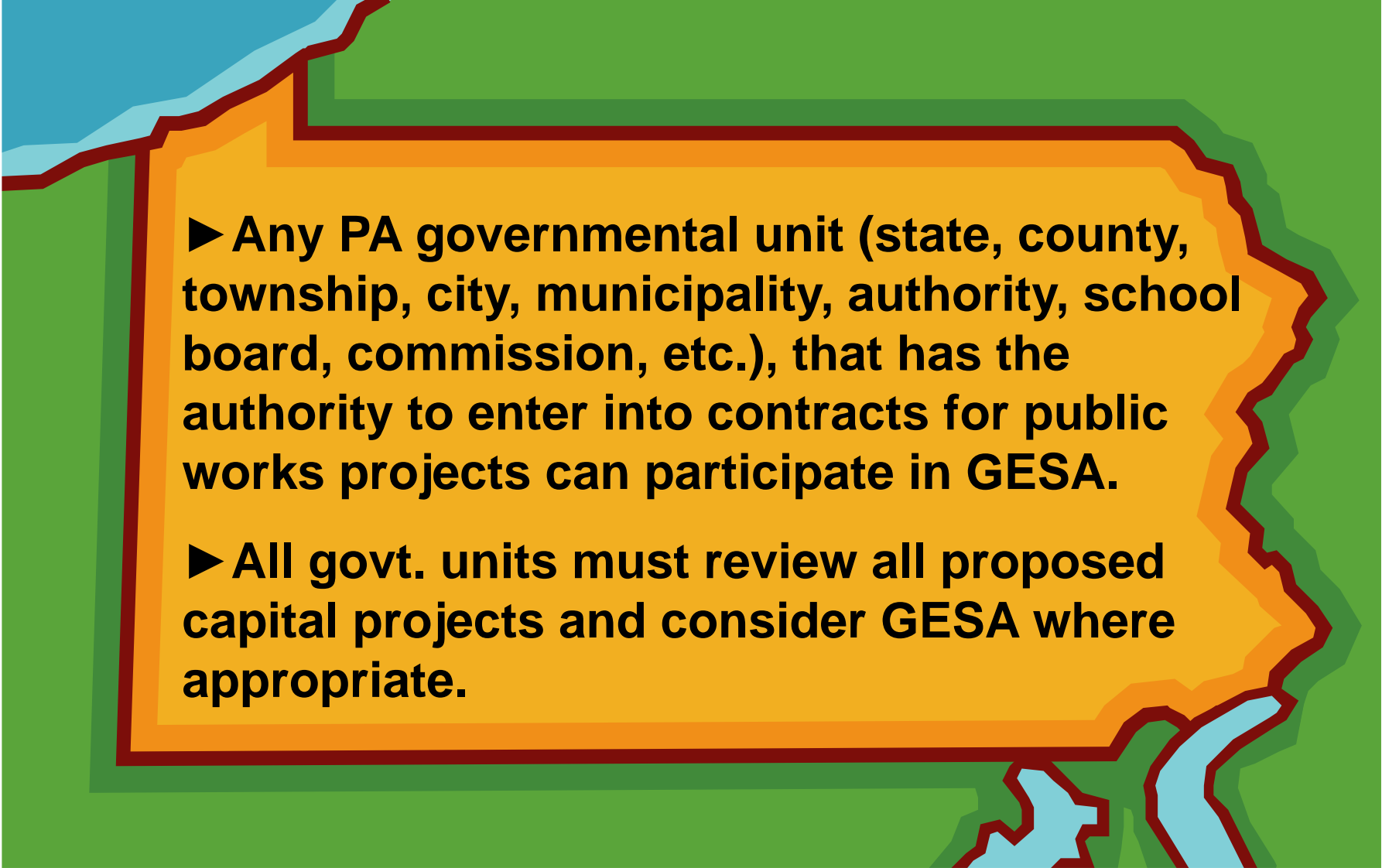
A brief overview of the...



*GUARANTEED ENERGY
SAVINGS ACT*

PA GESA:

- Act 57 of 1998 and Act 77 of 2003.
- Authorizes PA governmental units to engage in guaranteed energy savings contracts with “qualified” ESCOs.

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- ▶ Any PA governmental unit (state, county, township, city, municipality, authority, school board, commission, etc.), that has the authority to enter into contracts for public works projects can participate in GESA.
 - ▶ All govt. units must review all proposed capital projects and consider GESA where appropriate.

•Gov't unit must use a qualified provider for GESA projects.


Qualified provider: an entity capable of evaluating, designing, implementing, and installing ECMs. Known as ESCOs....Energy Service Companies.

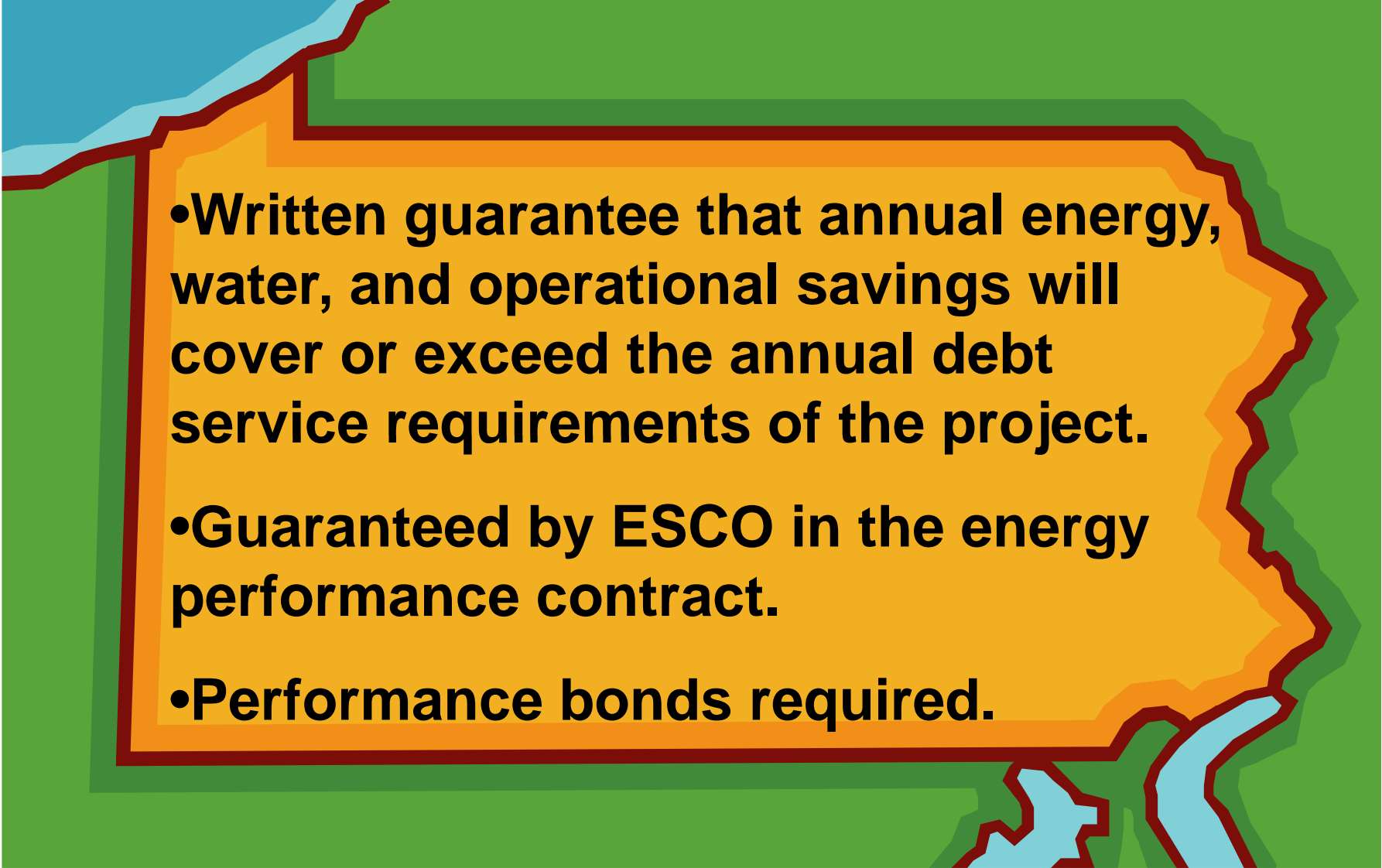


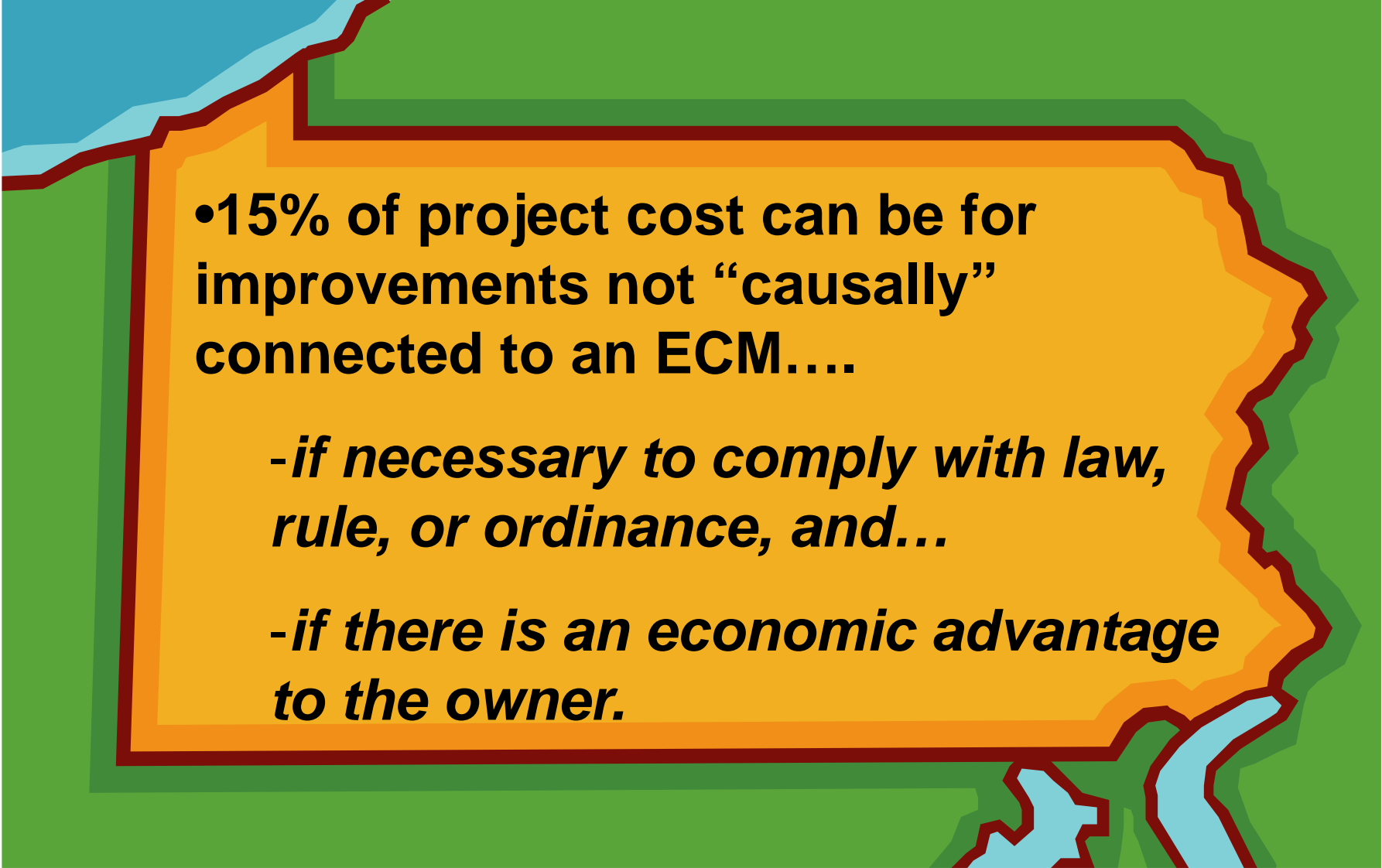
•**Defined ECMs:**

(energy conservation measures)

HVAC, lighting, insulation, windows, energy control systems, water-conserving fixtures, energy recovery systems, cogeneration, load shifting, operational modifications, others.

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- **Procurement via RFP (*competitive sealed bids based on best value*).**
 - **15 year maximum contract term. (*project payback \leq 15 years*).**
 - **3rd-party tax-exempt financing for gov't units (*bonds, lease-purchase, installment-payment, others*).**

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- **Written guarantee that annual energy, water, and operational savings will cover or exceed the annual debt service requirements of the project.**
 - **Guaranteed by ESCO in the energy performance contract.**
 - **Performance bonds required.**



•15% of project cost can be for improvements not “causally” connected to an ECM....

-if necessary to comply with law, rule, or ordinance, and...

-if there is an economic advantage to the owner.

How has PASSHE fared with GESA?

Eight questions asked of four universities at or past the IGA phase.





Interview questions:

1. Did your ESCO help to clarify understanding of energy inefficiencies that you were already aware of?
2. Did your ESCO identify any energy inefficiencies that your were not aware of?
3. Did your ESCO recommend any revised operating procedures?
4. What are the biggest advantages of the GESA project?



5. What are the biggest disadvantages of the GESA project?
6. If you could go back and do your GESA project over again, what would you do differently?
7. In comparison to a typical capital project with a design-bid-build format, are you satisfied with the amount of control you have over your GESA project?
8. Has your ESCO been reliable and responsible to your needs?



Some bits of advice from those interviewed:

- Review submittals and cut sheets thoroughly.
- Don't accept unproven equipment or technologies without investigation
- Exercise strict control over ESCO site visits during proposal phase
- Dedicate a full-time person to the project
- Share the knowledge you gain with others!



Questions or comments?

Thank you.