



# Project Financing: One size does not fit all

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# Learning Objectives

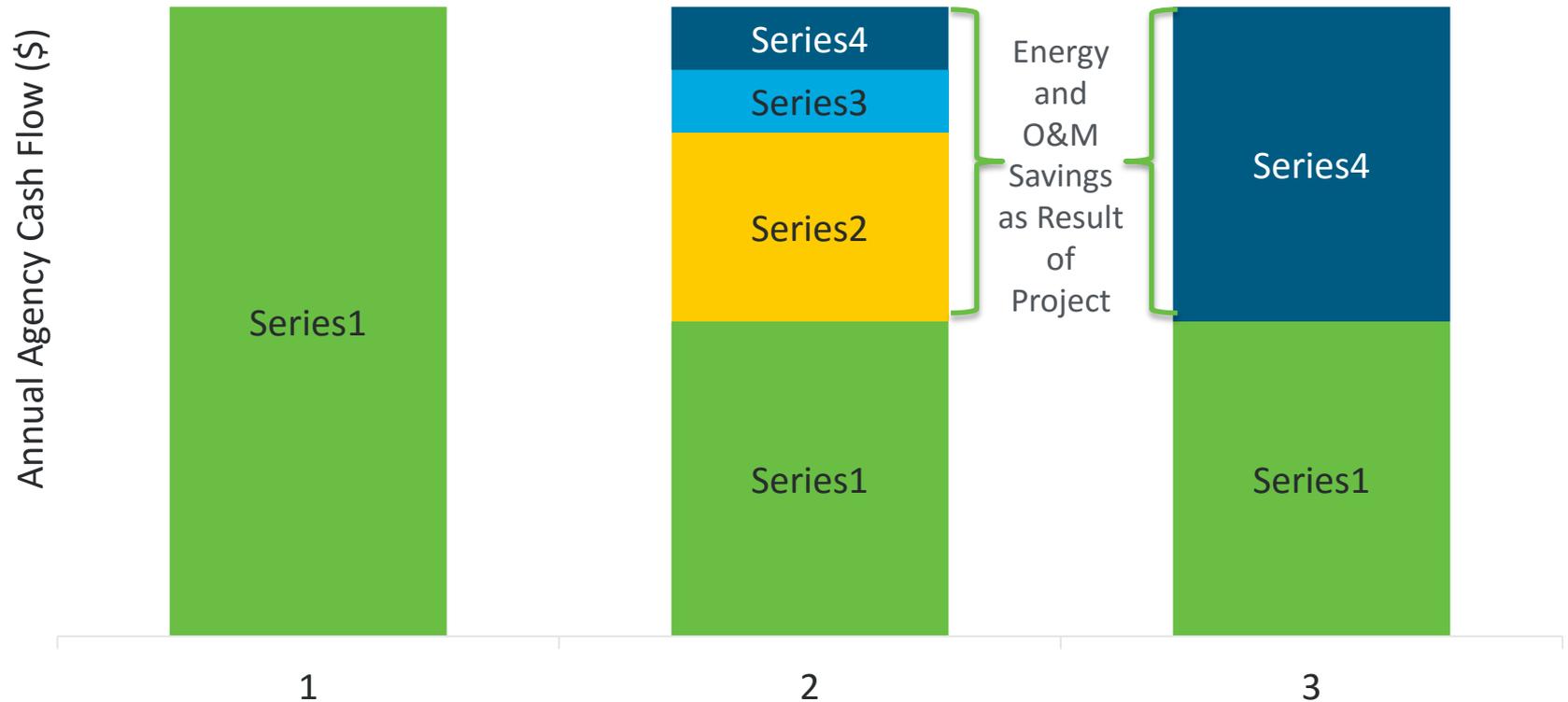
- To understand the major types of alternatively financed contract mechanisms
- Provide concepts for evaluation of which mechanism is the best fit for potential projects
- Illustrate how key variables/choices impact the financial viability of projects.

# Major Types of Alternatively Financed Projects

- Government Owned Equipment
  - Energy Savings Performance Contract (ESPC)
  - ESPC ENABLE
  - Utility Energy Service Contract (UESC)
- Contractor Owned Equipment (Typically)
  - Power Purchase Agreement (PPA)
- Project Specific
  - ESPC with Energy Sales Agreement (ESA)

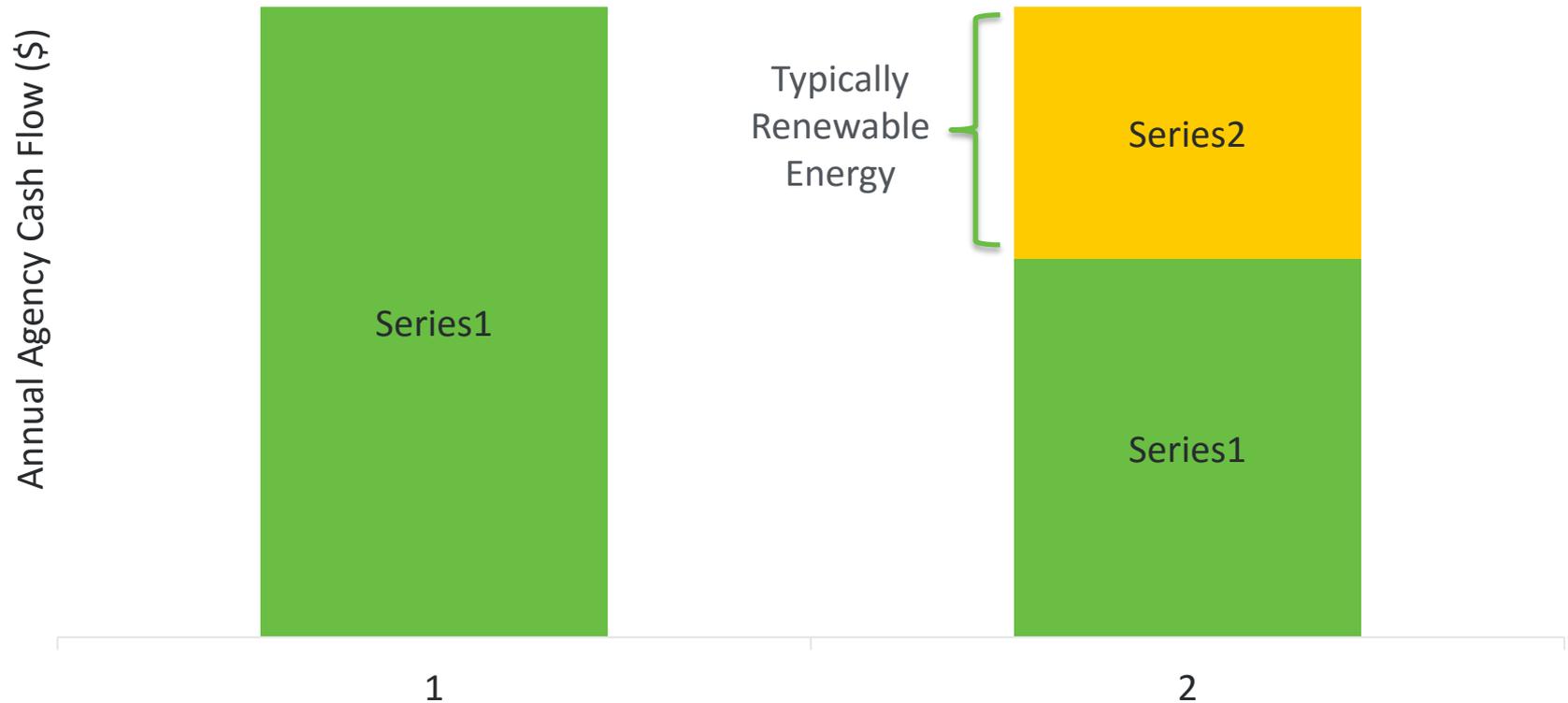
# Basic Cash Flow of ESPCs and UESCs

- Reallocation of Government's Utility Bill



# Basic Cash Flow of PPAs

- May or may not result in cost reduction



# Key Considerations in Developing Acquisition Strategy

- Potential Maximum Contract Term
- Ownership/Lease Type of Facilities
- Contract Availability
- Requirement for Financing
- Desired Level of Competition
- Cost/Obligation for Preliminary Assessment or Investigation
- On-going Measurement and Verification/ Performance Assurance Requirements
- Level of Performance Guarantee
- Third-party Operations and Maintenance Options
- Potential Measures/Technologies
- Location Options

# Alternative Finance Contract Comparison – part 1

Contract Characteristics	ESPC	ESPC w/ ESA	ESPC-Enable	UESC	PPA
<b>Maximum contract term</b>	25 yrs. max including construction period	25 yrs. max including construction period	25 yrs. max including construction period	Legislation silent although Utilities and Agencies sometimes limit to 10 or 25 yrs. (pending legislation to set at 25 yr. max)	Based on Agency statutory authority, policy and level of contracting innovation
<b>Eligible facilities</b>	Federally owned	Federally owned	Federally owned	Where government pays utilities; when offered/ authorized	Where government pays utilities; when offered/ authorized, subject to real property limitations
<b>Available contract</b>	DOE ESPC IDIQ, USACE ESPC MATOC	DOE ESPC IDIQ, USACE ESPC MATOC	GSA Schedule 84	Check with Utilities - GSA Areawide, Stand-alone Model Agreement, or BOA may exist	Templates are available - will be customized for each project

# Alternative Finance Contract Comparison – part 2

Contract Characteristics	ESPC	ESPC w/ ESA	ESPC-Enable	UESC	PPA
<b>Financing is available</b>	Required	Required	Required	Utility decision on whether to offer or not	Required
<b>Level of competition</b>	Potentially all on IDIQ/MATOC	Potentially all on IDIQ/MATOC	Potentially all on GSA Schedule 84	Possibly electric, natural gas and water utilities if they offer the services	Full and open, USACE Renewable Energy MATOC companies
<b>No upfront fee for preliminary assessment</b>	Required	Required	N/A - can move directly to Investment Grade Audit using FEMP survey tool	Utility decision / negotiated	Typically no as it could create COI

# Alternative Finance Contract Comparison – part 3

Contract Characteristics	ESPC	ESPC w/ ESA	ESPC-Enable	UESC	PPA
On-going measurement and verification/ performance assurance	Required	Required	Required, simplified	Utility decision / negotiated	Required
Performance guarantees	Required	Required	Required	Utility decision	Negotiated
Third-party operations and maintenance	ESCO responsible; tasking negotiated	ESCO responsible; tasking negotiated	ESCO responsible; tasking negotiated	Utility decision / negotiated	Required

# Alternative Finance Contract Comparison – part 4

Contract Characteristics	ESPC	ESPC w/ ESA	ESPC-Enable	UESC	PPA
<b>Technology types</b>	Energy efficiency, water conservation and renewable energy	Energy efficiency, water conservation and renewable energy	Limited Lighting, Water, basic HVAC Controls, HVAC Equipment, Solar PV	Energy efficiency, water conservation and renewable energy	Power generation, typically conventional or renewable energy generation
<b>Location options</b>	Any single, or number of federally owned properties	Any single, or number of federally owned properties	Any single, or number of federally owned properties	Any single, or number of federally owned properties within a single utility service territory with a participating utility	Any single site with land/space available for power generation development

# Acquisition Strategy Exercise

- Campus on 25 square miles, 100 owned buildings
- Numerous tenants and subtenants with multiple missions
- Central fuel oil fired steam plant
- Chilled water plant with significant maintenance issues that isn't always sufficient to meet the needs of the Campus
- Steam distribution system with countless leaks
- EISA 2007, Sec 432 evaluation identified energy and water conservation measures including fuel switch of steam plant, chilled water plant upgrades, HVAC, lighting, controls, steam distribution repairs, and solar PV

**Direct appropriations are not expected to be available so which type of contract would you recommend the Campus utilize?**

# Campus Acquisition Example – ESPC ENABLE, PPA, ESPC w/ ESA

Characteristic	Project Considerations	ESPC ENABLE	PPA
Potential Measures/Technologies	Central plant, HVAC, Lighting, Controls, Solar PV	No – desired ECMs beyond allowable measures	No – does not allow for retrofit ECMs

- ESPC w/ ESA – TBD, ESA’s generally are more cost effective when the equipment is owned by a third party due to the tax benefits/incentives.

# Campus Acquisition Example - ESPC

Characteristic	Project Considerations	ESPC
Potential Contract Term	Likely 15+ yrs due to major	OK
Ownership/Lease Type of Facilities	Owned	OK
Contract Availability	TBD - Likely desired	IDIQ/MATOC available
Requirement for Financing	Required – no direct appropriations available	OK
Desired Level of Competition	TBD – check with contracting	Up to all IDIQ/MATOC Contractors
Cost/Obligation for Preliminary Assessment or Investigation	Required – no direct appropriations available	OK
On-going M&V or Performance Assurance Requirements	Some level required	OK
Performance Guarantee Requirements	TBD - Likely required	OK
Third-party Operations and Maintenance Options	TBD - Likely desired	OK
Potential Measures/Technologies	Central plant, HVAC, Lighting, Controls, Solar PV	OK
Location Options	No known easements or real property concerns	OK

# Campus Acquisition Example - UESC

Characteristic	Project Considerations	UESC
Potential Contract Term	Likely 15+ yrs due to major	OK
Ownership/Lease Type of Facilities	Owned	OK
Contract Availability	TBD - Likely desired	Check with Utility
Requirement for Financing	Required – no direct appropriations available	Check with Utility
Desired Level of Competition	TBD – check with contracting	Limited
Cost/Obligation for Preliminary Assessment or Investigation	Required – no direct appropriations available	Check with Utility
On-going M&V or Performance Assurance Requirements	Some level required	Check with Utility
Performance Guarantee Requirements	TBD - Likely required	Check with Utility
Third-party Operations and Maintenance Options	TBD - Likely desired	Check with Utility
Potential Measures/Technologies	Central plant, HVAC, Lighting, Controls, Solar PV	OK
Location Options	No known easements or real property concerns	OK

# Key Parameters Impacting Financial Performance

- Interest rate
- Utility escalation rate
- Overall ECM mix
- Estimated savings available for payments
- Ability to utilize O&M savings for payments
- Level of capital contributions
- Contractor mark-up
- Level of M&V
- Level of third-party O&M/R&R
- Construction Period

# ECM Details

ECM Description	Implementation Cost*	Utility Cost Savings	O&M Savings	Simple Payback
Central Steam Plant Upgrades	\$7,865,000	\$800,000	\$250,000	10.9
Chiller Plant Upgrades	\$7,018,000	\$500,000	\$100,000	15.6
Steam Distribution Repair	\$1,452,000	\$140,000	\$50,000	11.5
Fuel Conversion	\$4,235,000	\$150,000	\$0	31.4
Interior Lighting	\$2,057,000	\$610,000	\$60,000	3.7
Control System Upgrades	\$2,541,000	\$150,000	\$50,000	18.8
Water Improvements	\$1,815,000	\$350,000	\$0	5.8
HVAC Retrofits	\$2,662,000	\$590,000	\$0	5.0
Building Envelope Improvements	\$1,815,000	\$100,000	\$0	20.2
PV System	\$10,890,000	\$375,000	\$0	32.3
<b>Total</b>	<b>\$42,350,000</b>	<b>\$3,765,000</b>	<b>\$510,000</b>	<b>11.2</b>

\*Includes mark-up of 21%

# Base Financial Parameters

## Financial Input

Interest Rate	4%
Construction Term (Months)	18
Savings During Construction	0%
Retained Savings	0%
Guaranteed Savings	95%
Implementation Mark-Up	21%
Performance Period Mark-up	21%
M&V Rate	0.15%
O&M Rate	1.50%

Notes: O&M Savings are included (~13.5% of savings)

## Financial Output

Total Financed Amount	\$ 42,350,000
<b>Total Payments/TCV</b>	<b>\$ 78,837,766</b>
Total Interest	\$ 20,590,179
Total PP Expenses	\$ 15,897,587
<b>Contract Term</b>	<b>18.5</b>

# What Happens If O&M Savings are Excluded?

- A. No change to term
- B. Term increase of 1 year
- C. Term increase of 2-3 years
- D. Term increase of 4+ years

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- D. Term increase of 4+ years

**D - The term increases by over 4 years and total payments by nearly \$10M**

## What Happens If Mark-Up is Reduced from 21% to 17%?

- A. No change to Total Contract Value (TCV)
- B. TCV decreases by ~2%
- C. TCV decreases by ~4%
- D. TCV decreases by ~6%

## What Happens If Mark-Up is Reduced from 21% to 17%?

- A. No change to Total Contract Value (TCV)
- B. TCV decreases by ~2%
- C. TCV decreases by ~4%
- D. TCV decreases by ~6%

**D - The term decreases by 1 year and total payments fall by ~6.0%**

# What Happens if the Construction Term is Reduced by 8 Months to 10 Months?

- A. No change to TCV
- B. TCV is reduced by  $< \$1\text{M}$
- C. TCV is reduced by  $< \$3\text{M}$
- D. TCV is reduced by  $> \$3\text{M}$

## What Happens if the Construction Term is Reduced by 8 Months to 10 Months?

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- C. TCV is reduced by  $< \$3\text{M}$
- D. TCV is reduced by  $> \$3\text{M}$

**C - The TCV decreased by  $\$2.7\text{M}$**

## What Happens If annual M&V Costs are Increased from 0.15% to 0.5% of initial capital investment?

- A. No change to annual payment or TCV
- B. Minimal increase to TCV
- C. Term increases by 1 year
- D. Annual payments increased

## What Happens If annual M&V Costs are Increased from 0.15% to 0.5% of initial capital investment?

- A. No change to annual payment or TCV
- B. Minimal increase to TCV
- C. Term increases by 1 year
- D. Annual payments increased

**C - The term increases by 1 year and TCV by \$6.2M**

# What Happens If PV is Removed from Project?

- A. TCV and term are reduced
- B. TCV is reduced only
- C. Term decreases only
- D. Annual payments are reduced to retain term

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- A. TCV and term are reduced
- B. TCV is reduced only
- C. Term decreases only
- D. Annual payments are reduced to retain term

**A – Decreases term by 4 years and TCV by \$27M**

# What Happens If Lighting and Minor HVAC Work is Done Outside the Project?

- A. TCV is reduced due to lower cost
- B. The term increases by 3-4 years
- C. The term decreases by 3-4 years
- D. Term surpasses 25 year limit

## What Happens If Lighting and Minor HVAC Work is Done Outside the Project?

- A. TCV is reduced due to lower cost
- B. The term increases by 3-4 years
- C. The term decreases by 3-4 years
- D. Term surpasses 25 year limit

**D - The term is 26.5 years (8 year increase) with TCV increase of \$10.9M. Project is above maximum term and doesn't work**

## What Happens if the Interest Rate Goes Up by 0.25%?

- A. Minimal impact to the project
- B. The construction period increases
- C. Annual payments increase
- D. Term and TCV increases

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**D - The term increases by 1 years and TCV increase by \$3.3M**

# What Happens if Guaranteed Savings decrease to 90%?

- A. The term and TCV increase
- B. M&V costs decrease
- C. Minimal impact to financials
- D. The term and TCV decrease

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- B. M&V costs decrease
- C. Minimal impact to financials
- D. The term and TCV decrease

**A - The term increases by 2 years and TCV increases by \$4.2M**

# What Happens if a \$2M Capital Contribution is Included?

- A. TCV remains the same
- B. TCV decreases by \$2M
- C. TCV decreases by \$2M+
- D. TCV increases by \$2M

# What Happens if a \$2M Capital Contribution is Included?

- A. TCV remains the same
- B. TCV decreases by \$2M
- C. TCV decreases by \$2M+
- D. TCV increases by \$2M

**C - The term decreases by 1 year and TCV decreases by \$3.2M (note that the \$2M capital contribution is included in TCV)**

# Financial Pro Forma for Parametric Analysis

ECM Information (do not edit)					
ECM #	ECM Description	Cost	Total Energy Saving (MBTU)	Payback	Include? (Yes/No)
1	Boiler Replacement	\$10,444,336	394,285	26.49	Yes
2	Chiller Plant Improvements/Expansion	\$0	0		No
3	Distributed Generation (Combined Heat & Power)	\$0	0		No
4	Heating Ventilation & Air Conditioning	\$0	0		No
5	BAS Improvements (Controls Optimization)	\$5,865,996	255,160	22.99	Yes
6	Renewable Energy Systems	\$0	0		no
7	Steam & Hot Water System Improvements	\$1,296,358	77,124	16.81	Yes
8	Electric Motors and Drives	\$6,866	466	14.73	Yes
9	Lighting Improvements	\$0	0		No
10	Building Envelope Modifications	\$235,820	15,886	14.84	Yes
11	Water and Sewer Conservation Systems (Install Pool Cover)	\$79,386	3,767	21.07	Yes

Financial Input	
Description	Input
Additional Cost	\$0
Capital Contribution	\$2,750,000
Approximate Interest Rate (%)	4.000%
Construction Term (Months)	12
Savings During Construction (%)	100%
Impliment Markup (%)	20%
PP Markup (%)	12%
Agency Retained Savings (%)	0%
Guaranteed Savings (%)	90%
Level of O&M/R&R (%)	0.5%
Level of M&V (%)	1.0%

Financial Metrics	
Total Payments	\$ 33,233,743
Total Interest	\$ 8,903,609
Total PP Expenses	\$ 9,151,373
Potential Non-Guaranteed Savings	\$ 3,692,638
Potential Retained Savings	\$ -
Contract Term (Max of 35 yrs, incl construction)	25.0

# Alt Finance Lessons Learned

- Different contracting mechanisms allow for different type of benefits and flexibilities
- All of the details impact the overall financials of a project
- No single detail is more important than the rest, so it's important to strike a balance when developing a project
- Creativity and persistence throughout the planning and development can be the driving factors in a successful project

Thank You

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