



# Performance Based Contracts

Investment Grade Audits (IGA)





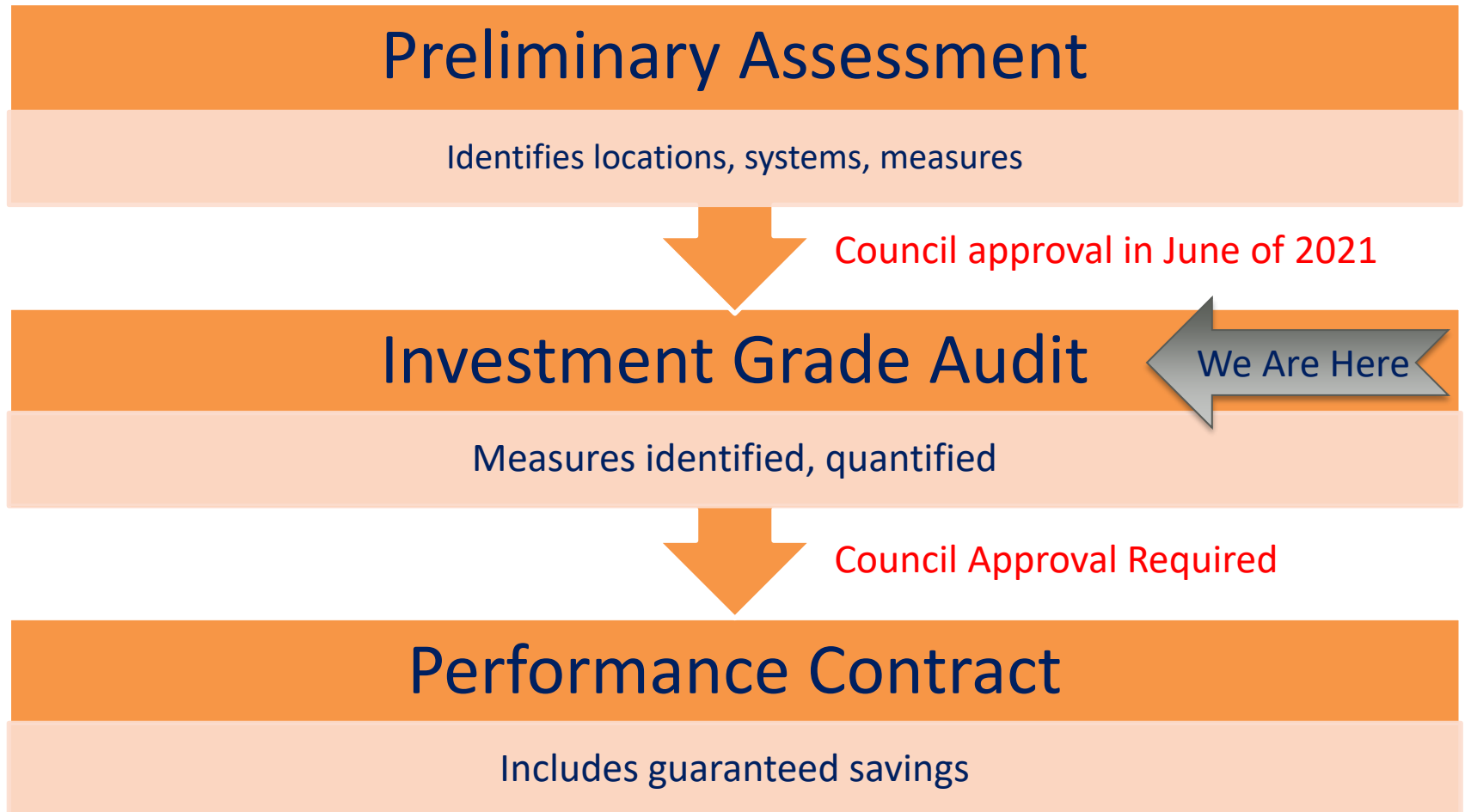
# Background

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- On March 23, 2021, staff introduced Performance Based Contracting and discussed preliminary assessments.



# Energy Saving Performance Contracts Process





# Investment Grade Audit Explained

## PURPOSE

The purpose of the Investment Grade Audit (IGA) is to conduct a total site-wide analysis of each building to determine its current energy consumption, identifying areas for improvement and the measures that can be implemented and funded solely through energy savings.





# Pilot Project #1 Overview

**Performance Based Contracts**





# Project #1 Preliminary Assessment (2021)

- Foothills Library
  - FY22 CIP has \$225,000 for HVAC
- Main Library
  - FY23 CIP has \$1,000,000
- Park Lighting



## Simple Payback without Capital Contribution

<b>Conversion Cost</b>	<b>\$2,065,255</b>
<b>Annual Energy Savings</b>	<b>\$200,066</b>
<b>Payback</b>	<b>10.3 years</b>

## Simple Payback with Capital Contribution

<b>Conversion Cost</b>	<b>\$2,065,255</b>
<b>Capital Replacement Cost Savings</b>	<b>\$1,225,000</b>
<i>Conversion less capital contribution</i>	<i>\$840,255</i>
<b>Annual Energy Savings</b>	<b>\$200,066</b>
<b>Payback</b>	<b>4.2 years</b>



# Pilot Project #1 Audit Results (2022)

ECM

## EXTERIOR LIGHTING

### Scope

#### Foothills Branch Library:

- Existing:
  - Parking Lots Poles: (13) 400W HPS poles & (6) 70W HPS poles,
  - Building Exterior Fixtures: (16) Various HID Wall Packs and (4) HID Floods
- Proposed:
  - Parking Lots Poles: (13) 150W LED & (6) 52W LED
  - Building Exterior Fixtures: (16) 12W-30W LED Wall Packs and (4) 18W LED Floods

#### Glendale Main Library:

- Existing:
  - Parking Lots Poles: (6) 105W LED poles & (6) 400W HPS poles
  - Building Exterior Fixtures: (3) Various HID Wall Packs and (28) CFL Recessed Cans
- Proposed:
  - Parking Lots Poles: (0) No change for existing LED & (6) 150W LED
  - Building Exterior Fixtures: (3) LED Wall Packs and (28) 15W LED Recessed Cans



### Financials

Measure Price	\$33,051
Annual Energy Savings	\$5,736
Potential Rebate	\$0
Simple Payback w/o Rebate	5.8



# Pilot Project #1 Audit Results (2022)

ECM

## INTERIOR LIGHTING SAVINGS

### Scope

#### Foothills Branch Library:

- Existing: (447) Fluorescent, CFL, HID, Incandescent and Halogen Fixtures and/or Lamps
- Proposed: (447) LED Retrofit Fixtures and/or Lamps

#### Glendale Main Library:

- Existing: (1792) Fluorescent, CFL, HID, Incandescent and Halogen Fixtures and/or Lamps
- Proposed: (1792) LED Retrofit Fixtures and/or Lamps

#### Velma Teague Library:

- Existing: (405) Fluorescent & HID Fixtures and/or Lamps
- Proposed: (405) LED Retrofit Fixtures and/or Lamps



### Financials

Measure Price	\$385,061
Annual Energy Savings <sup>1</sup>	\$44,803
Potential Rebate	\$0
Simple Payback w/o Rebate	8.6

<sup>1</sup> Hours of Operation based off published hours



# Pilot Project #1 Audit Results (2022)

ECM

## MECHANICAL SYSTEM SAVINGS

### Scope

#### Foothills Branch Library:

- Chiller:
  - Existing: (1) 110-ton constant speed screw chiller
  - Proposed: (1) 105-ton constant speed screw chiller
- Chiller Water Temperature Setpoint:
  - Existing: Fixed 45 degree
  - Proposed: Variable, based on outside air temperature

#### Glendale Main Library:

- Chillers:
  - Existing: (2) 100-ton constant speed reciprocating chillers & (1) two-cell cooling tower with variable speed fan
  - Proposed: (2) 100-ton constant speed screw chillers & (1) new two-cell cooling tower with variable speed fan
- Chiller Water Temperature Setpoint:
  - Existing: Fixed 45 degree
  - Proposed: Variable, based on outside air temperature



### Financials

Measure Price	\$775,722
Annual Energy Savings	\$13,140
Potential Rebate	\$0
Simple Payback w/o Rebate	59.0



# Pilot Project #1 Audit Results (2022)

ECM

## PARK

### LIGHTING SAVINGS

#### Scope

##### Regional Parks (25-200 acres):

- Foothills Park LED Lighting
- Grand Canal Linear Park LED Lighting

##### Community Parks (10-25 acres):

- Foothills Sports Park LED Lighting
- Foothills Playground LED Lighting
- Chaparral Park LED Lighting
- Bonsall Park North LED Lighting
- Bonsall Park South LED Lighting
- Rose Lane Park LED Lighting
- Rose Lane Aquatic LED Lighting

##### Small Parks (0-10 acres):

- Too small of scope for determining reasonable payback per site without aggregating



#### Financials

Measure Price	\$648,644
Annual Energy Savings	\$72,031
Potential Rebate	\$0
Simple Payback w/o Rebate	9.0



# Park Lighting Example

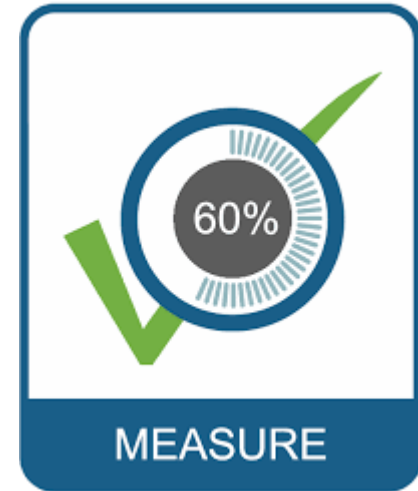
Acoma Park Before LED



Acoma Park After LED



# Pilot Project #1 Audit Results (2022)





# Pilot Project #1 Totals (2022)

- Foothills Library
  - FY22 CIP has \$225,000 for HVAC
- Main Library
  - FY23 CIP has \$1,308,017
  - \$455,00 is for the chiller
- Park Lighting

## Simple Payback without Capital Contribution

<b>Conversion Cost</b>	<b>\$1,842,479</b>
<b>Annual Energy Savings</b>	<b>\$135,710</b>
<b>Payback</b>	<b>13.6 years</b>

## Simple Payback with Capital Contribution

<b>Conversion Cost</b>	<b>\$1,842,479</b>
<b>Capital Replacement Cost Savings</b>	<b>\$1,533,017</b>
<i>Conversion less capital contribution</i>	<i>\$309,462</i>
<b>Annual Energy Savings</b>	<b>\$135,710</b>
<b>Payback</b>	<b>2.3 years</b>



# Pilot Project #2 Overview

## Performance Based Contracts





# Project #2 Preliminary Assessment (2021)

- HVAC:

- Rooftop units at Advocacy Center & Bead Museum
- New split system and mini-splits at Civic Center
- Cooling Tower replacement and variable speed chilled water pumping at Adult Center

- Lighting: Eleven Locations

- Solar: GRPSTC, Civic Center, FRAC, Adult Center

- Note – lighting from FRAC not factored into Capital Equipment Contribution

## Simple Payback

<b>Conversion Cost</b>	<b>\$5.9M</b>
<b>Annual Energy Savings</b>	<b>\$327,000</b>
<b>Payback</b>	<b>18 years</b>

## Simple Payback with Capital Replacement Savings

<b>Conversion Cost</b>	<b>\$5.9M</b>
<b>Capital Equipment Contribution</b>	<b>\$950,000</b>
<i>Conversion less capital contribution</i>	<i>\$4,950,000</i>
<b>Annual Energy Savings</b>	<b>\$327,000</b>
<b>Payback</b>	<b>15.1 years</b>



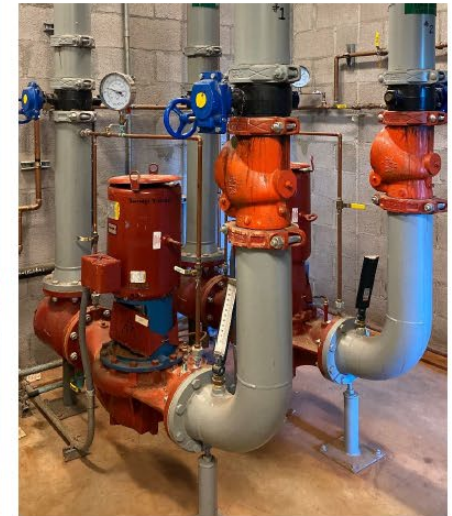
# Pilot Project #2 Audit Results (2022)

## Energy Conservation Measures (ECMs): Variable Speed Chilled Water Pumps

### ✓ Variable Speed Chilled Water Pumping at Adult Center

- Includes new variable speed drives and controls
- Operates above chiller minimum evaporator flow
- Modulates on temp/pressure

Project cost - \$77,561





# Pilot Project #2 Audit Results (2022)

## Energy Conservation Measures (ECMs): Cooling Towers

### ✓ Cooling Tower Replacement at The Adult Center

- Evaporative Cooled Fluid Cooler used for outside air pre-cooling
- Coils receive water spray and become fouled and less efficient
- Will reduce down-time in event of failure in near future

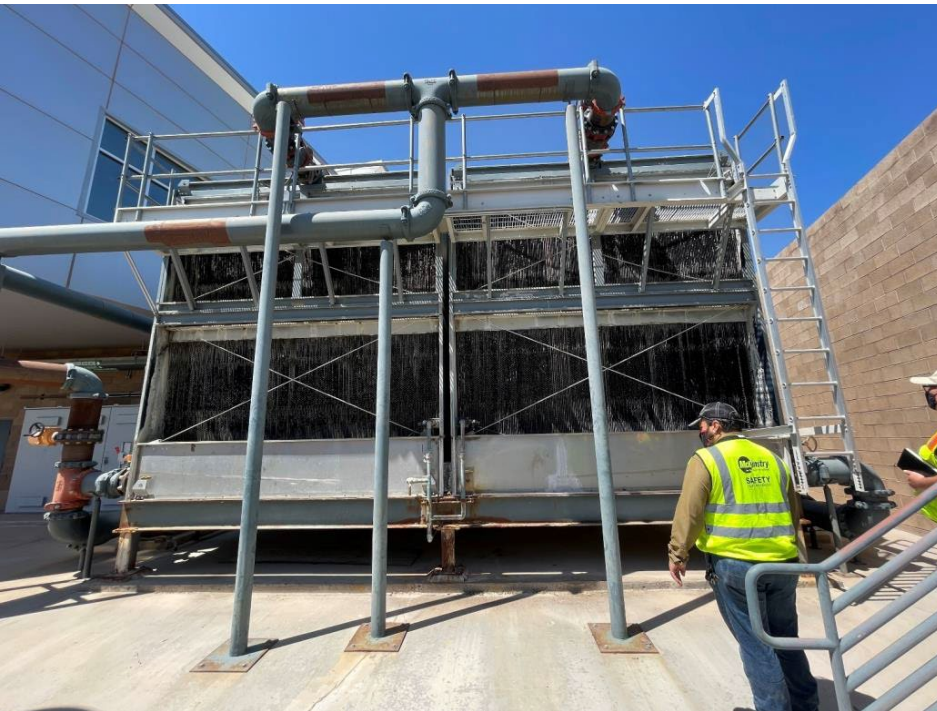
Project cost - \$554,532





# Pilot Project #2 Audit Results (2022)

Foothills Recreation & Aquatics Center



Project cost - \$560,889

# Pilot Project #2 Audit Results (2022)

## Lighting Upgrade Site List



**Advocacy Center**



**Bead Museum**



**Annex**



**Civic Center**



**Civic Center Campus  
Commons**



**Park and Ride**



**Adult Center**



**Foothills Rec and  
Aquatic Center**



**Fire Station 151**



**Fire Support Services**



**Sine Building**



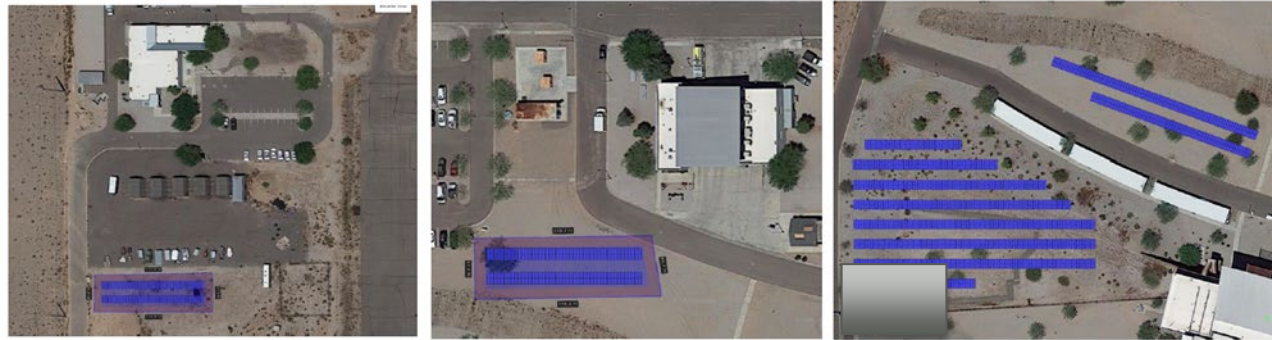
**GRPSTC**

Project cost - \$1,279,244



# Solar Evaluation Preliminary Assessment (2021)

## Proposed GRPSTC Layouts



## Proposed Civic Center, FRAC, & Adult Center Layouts





# Solar Preliminary Assessment (2021)

Facility	System Size, kW-dc	Yr. 1 Bill Savings	Estimated Conversion Cost	Payback, Years
GRPSTC	737	\$73,800		
Civic Center	295	\$47,300		
FRAC	583	\$71,400		
Adult Center	162	\$17,600		
<b>Total</b>	<b>1,776</b>	<b>\$210,100</b>	<b>\$3,255,000</b>	<b>15.5</b>

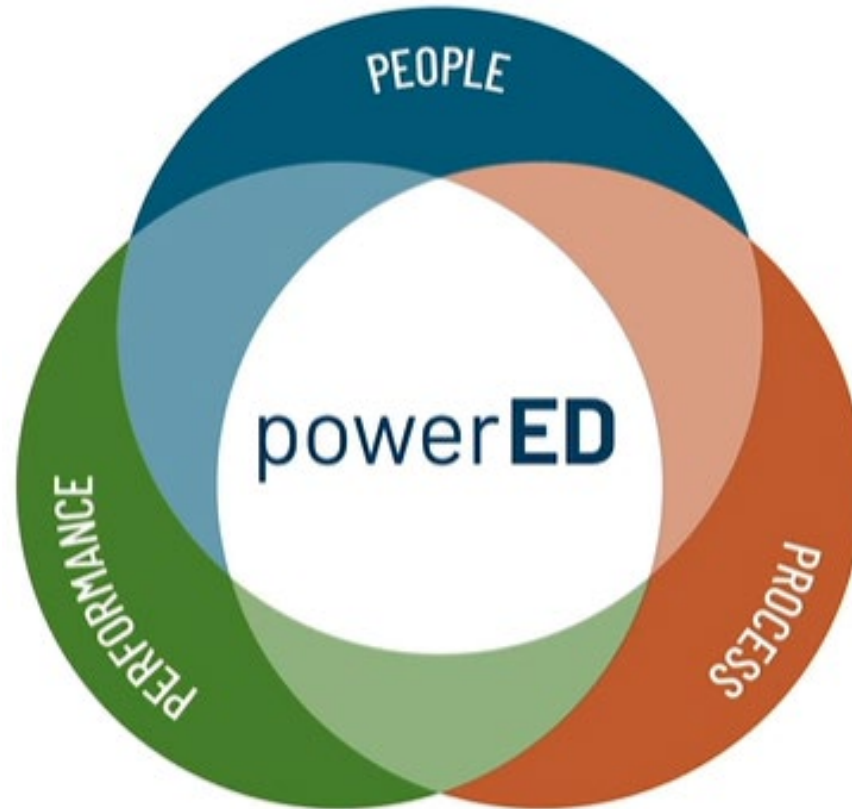


# Solar Evaluation Audit Results (2022)

Facility	System Size, kW-dc	Yr. 1 Bill Savings	Conversion Cost	Payback, Years
GRPSTC	524.9	\$67,852	\$2,174,872	32.05
Civic Center	182.3	\$36,110	\$870,020	24.09
FRAC	619.7	\$79,708	\$2,226,172	27.92
Adult Center	Removed	Removed	\$0	
<b>Total</b>	<b>1,326.9</b>	<b>\$183,670</b>	<b>\$5,271,064</b>	<b>28.70</b>



# Project #2 Audit Results – Power ED



Project cost - \$234,900.00



# Project #2 Totals (2022)

- HVAC:
  - Cooling Tower replacement and variable speed chilled water pumping at Adult Center
  - Cooling tower replacement – FRAC
  - Cooling Tower replacement – Civic Center
- Lighting: Eleven Locations
- Solar: GRPSTC, Civic Center, and FRAC
- Note – lighting from FRAC not factored into Capital Equipment Contribution

## Simple Payback

<b>Conversion Cost</b>	<b>\$8.2M</b>
<b>Annual Energy Savings</b>	<b>\$342,777</b>
<b>Payback</b>	<b>23.9 years</b>

## Simple Payback with Capital Replacement Savings

<b>Conversion Cost</b>	<b>\$8.2M</b>
<b>Capital Equipment Contribution</b>	<b>\$443,600</b>
<i>Conversion less capital contribution</i>	<i>\$7,756,400</i>
<b>Annual Energy Savings</b>	<b>\$342,777</b>
<b>Payback</b>	<b>22.6 years</b>



# Total Performance Based Contract Summary

	<b>Preliminary Assessment (2021)</b>	<b>Investment Grade Audit (2022)</b>
<b>Project 1 and 2 total cost</b>	\$7,965,255	\$10,042,479
<b>Total Annual Energy Saving</b>	\$527,066	\$478,487
<b>Total Capital Contribution</b>	\$2,175,000	\$1,976,617
<b>Total Project Cost minus Capital Contribution</b>	\$5,790,255	\$8,065,862
<b>Total Payback without Capital Contribution</b>	15.1 years	21 years
<b>Total Payback with Capital Contribution</b>	11 years	16.9 years



# Benefits

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- Combining projects allows us to enhance savings
- Coordination goes through contractors
- Commissioning goes through contractors
- Measurement and Verification included



# Funding

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- Use \$1,976,617 from FY23 CIP
- Program \$8,065,862 to FY24 CIP\*

\*Cost of project(s) could change all the way up to contract execution

- ✓ Provide consensus to continue with pilot projects
  - ✓ Formal approval at upcoming voting meeting