



City of Merced Energy Infrastructure Upgrade Project

May 18, 2026



Agenda

- Scope Summary
- Scope Overview
- Financial Analysis
- Project Benefits
- Project Roadmap
- About Energy Systems Group

Scope of Work

City of Merced - ECM Summary Matrix

Name of Facility	Address	Total kWh	Total Therms	Total Utility Cost	MID Territory	PG&E Territory	Solar	Battery Energy Storage	Linear Generator	Electric Vehicle Charging	Interior Lighting	Outdoor Lighting	Chiller Replacements	Package Unit HVAC & HVAC Controls	HVAC Controls	Variable Speed Pumping	Multizone HVAC Retrofit	Electrical Transformers
Wastewater Treatment Plant	1961 Gove Rd S	8,223,129	9,057	\$1,674,911	X		X		X									
Pumping Station - UC Merced	5200 N Lk Rd	804,492	-	\$275,188		X		X										
Pumping Station - #8	1745 W N Bear Creek Dr	414,169	-	\$147,232		X		X										
Civic Center	678 W 18th St	701,640	9,257	\$150,315	X						X		X			X		X
Multicultural Arts Center	645 W Main St	194,520	1,659	\$44,033	X						X			X	X			X
Fire Station 51	99 E 16TH ST	169,164	3,898	\$75,318		X					X			X	X			X
Fire Station 52	1400 Falcon WY	58,057	2,079	\$31,506		X					X			X	X			X
Fire Station 53	800 Loughborough Dr.	69,593	2,370	\$37,468		X					X			X	X			X
Fire Station 54	1425 E 21ST ST	31,595	987	\$16,802		X					X			X	X			X
Fire Station 55	3520 Parsons	64,040	1,218	\$14,729	X						X			X	X			X
DPW Yard	1776 Grogan Ave	218,385	1,038	\$104,233		X				X	X	X		X	X			X
Police HQ	611 W 22nd St	359,760	6,767	\$85,970	X						X		X			X	X	X
Police Building South	470 W 11TH ST	55,201	917	\$27,827		X					X			X	X			X
McNamara Youth Center	470 W 11TH ST	21,085	169	\$10,303		X					X			X	X			X
McNamara Park	470 W 11TH ST	40,417	-	\$19,350		X						X						
Total		11,425,247	39,416	\$2,715,186	5	11	1	2	1	1	11	2	2	9	9	2	1	11

Interior LED Lighting

Install LED lighting across the following facilities:

- Civic Center
- Multicultural Arts Center
- Fire Station 51
- Fire Station 52
- Fire Station 53
- Fire Station 54
- Fire Station 55
- DPW Yard
- Police HQ
- Police Building South
- McNamara Youth Center

Includes the following:

- LED tube replacements
- CFL to LED lamp and fixture replacements



Benefits include:

- Reduced energy consumption
- Improved lighting quality
- Reduced maintenance costs
- Smart controls & integration as desired per location
- Longer life of lighting system

Exterior LED Lighting

Install LED lighting across the following facilities:

- DPW Yard
- McNamara Park

Includes the following:

- New pole mounted LED fixtures
- Title 24 compliant controls and new time clocks



Benefits include:

- Reduced energy consumption
- Improved lighting quality
- Reduced maintenance costs
- Smart controls & integration as desired per location
- Longer life of lighting system

HVAC Replacements

Like-for-like replacement of HVAC units near or past useful life with more efficient units at the following facilities:

Building	Units	Cooling Tons
Multicultural Arts Center	20	111
Fire Station 51	3	19
Fire Station 52	1	8
Fire Station 53	1	8
Fire Station 54	1	4
Fire Station 55	4	20
DPW Yard	7	30
Police Building South	4	12
McNamara Youth Center	2	9

- Packaged HVAC units
- Split System units



Benefits include:

- Energy efficiency
- Improved comfort & indoor air quality
- Reduced maintenance & increased reliability
- Planned replacement avoids costly emergency failures

HVAC Controls for Packaged/Split Units



Replace HVAC controls at the following facilities:

- Multicultural Arts Center
- Fire Station 51
- Fire Station 52
- Fire Station 53
- Fire Station 54
- Fire Station 55
- DPW Yard
- Police Building South
- McNamara Youth Center



Includes the following:

- Replacement of existing HVAC controls to allow for improved visibility and optimized scheduling
- Pelican controls with BACnet integration to Niagara. ESG can alternatively provide more advanced controllers and thermostats at desired sites

Benefits include:

- Optimized energy efficiency
- Improved scheduling and controllability
- Improved comfort and occupant control
- Remote monitoring & control
- Reduced maintenance
- Standardization



Air Cooled Chillers and Variable Speed Pumping

Air cooled chiller replacements at the following facilities:

- Civic Center – One (1) 200-Ton
- Police HQ – One (1) 52-Ton

Includes the following:

- Variable speed chiller with magnetic bearings for higher efficiencies
- Low-GWP compliant refrigerant without concerns for serviceability



Benefits include:

- Higher efficiencies
- Removal of R410A refrigerant which will see serviceability issues as supply diminishes
- Reduced maintenance & increased reliability
- Planned replacement avoids costly emergency failures

Multizone Air Handler Variable Volume Retrofit

Install controls based retrofit of dual deck multizone air handlers at the Merced Police HQ building

Includes the following:

- Independent cold deck and hot deck damper actuators
- VFDs for fan motors (where not already existing)
- Controls programming to modulate airflow based on zone demand



Benefits include:

- Significant energy savings
- Reduced maintenance & increased reliability
- Quieter operation due to lowered fan speeds

EV Charging Stations

Install ten (10) Level 2 DC Fast Charging Stations at the DPW Yard

- 20 kW dual port electric vehicle chargers
- New dedicated PG&E service and corresponding electrical infrastructure



Fully charge Ford E-Transit in 2-3 hours and Chevy Silverado EV in 8-9 hours



Benefits include:

- Industrial grade chargers suitable for DPW requirements
- Reasonable charge times even with larger battery vehicles such as the Chevy Silverado EV
- \$30k in incentives from the San Joaquin Valley Air Pollution Control District

Electrical Transformers

Replace like-for-like old inefficient transformers with new high efficiency units across eleven (11) facilities:

- Civic Center
- Multicultural Arts Center
- Fire Station 51, 52, 53, 54, 55
- DPW Yard
- Police HQ
- Police Building South
- McNamara Youth Center



Benefits include:

- Increase reliability of critical electrical infrastructure
- Reduces electrical safety hazards of old infrastructure
- Reduced energy consumption
- Reduced noise

Battery Energy Storage System (BESS)

Install battery energy storage systems at two (2) pump stations

- Pump station at UC Merced - 100kW/400kWh
- Pump station for Well #8 - 50kW/200 kWh



Reduces hefty demand charges from PG&E B19 Rate



Energy arbitrage savings by moving utility consumption to off-peak hours



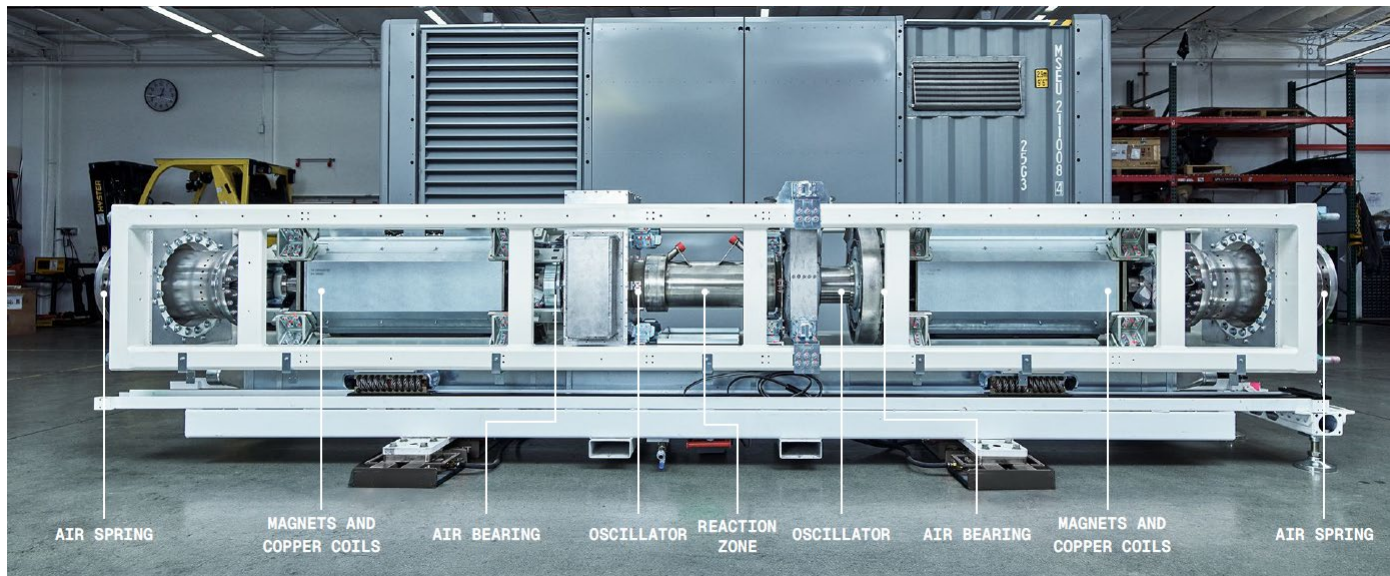
Benefits include:

- Energy cost savings
- Resilient operations
- Inflation Reduction Act incentives: Estimated **\$300k** in IRA tax credits captured to reduce total project cost
- Compact deployment

Mainspring Linear Generator for the WWTP

Install a 230 kW Mainspring Linear Generator at the Wastewater Treatment Plant

The Mainspring Linear Generator will convert digester gas into useful energy, strengthening project economics while improving sustainability and resilience



Benefits include:

- Energy cost savings
- Reduced emissions
- Resilient operations
- Modular design allows future capacity expansion as plant load or biogas production increases
- Inflation Reduction Act incentives: Estimated **\$850k** in IRA tax credits captured to reduce total project cost
- 24/7/365 remote monitoring
- Compact deployment

Solar Photovoltaic Array

Install a 985.6 kW Solar PV array at the WWTP

- Ground mount array at northern area of the facility



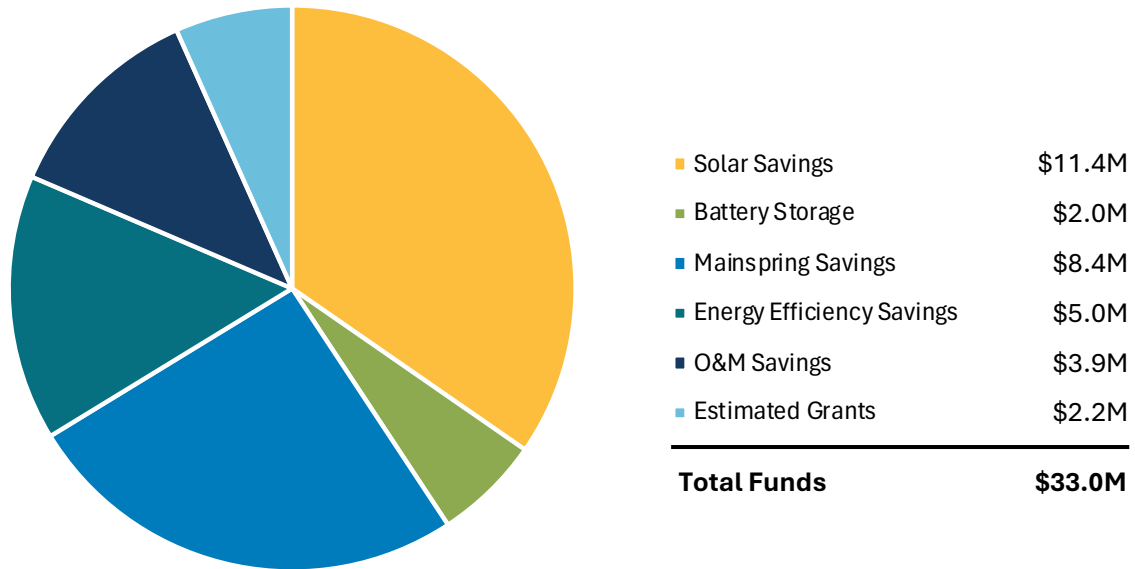
Benefits include:

- Energy cost savings and long-term utility rate protection
- Estimated **\$1M** of Inflation Reduction Act tax credits captured before the program expires

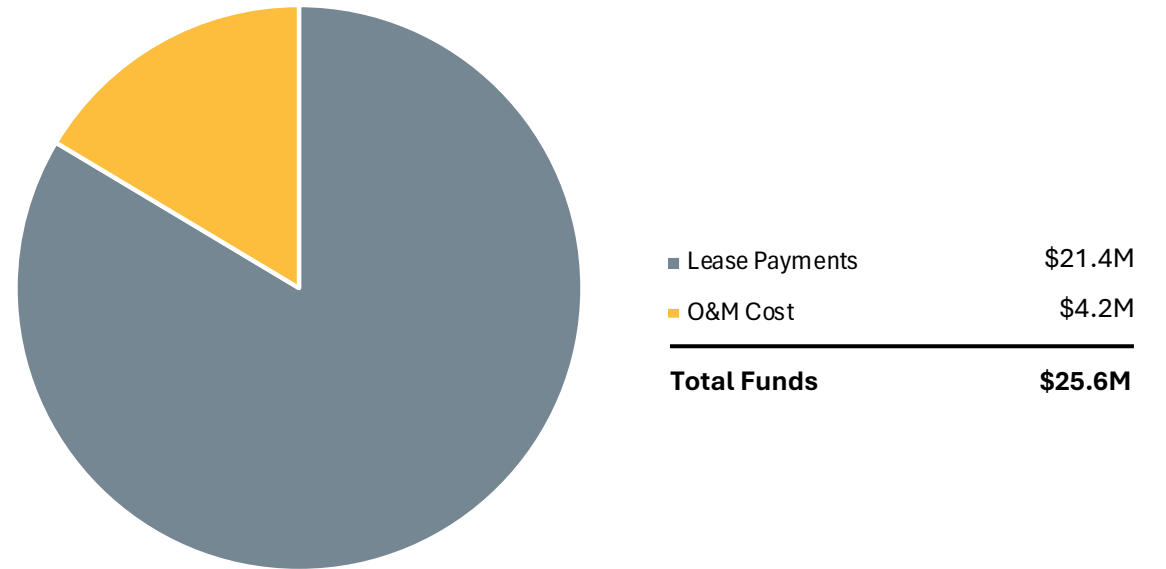
Project Cash Flow Over Life

Project Price: \$14.1M

Sources of Funds



Uses of Funds



Net Savings

\$7.4M

Project Benefits

- Modernize City infrastructure using project savings and free up general fund dollars
- Net savings of \$7.4 million after paying for all costs
- Hedge against rising energy cost
- Turnkey delivery and reduced staff burden
- Save administrative time by accomplishing multiple projects together
- Improve comfort and safety for community
- Estimated \$2.1 million Inflation Reduction Act cash subsidy
- Substantial savings in maintenance staff time
- Improve operation of critical facilities
- Improve lighting quality
- Stimulate local economy
- Improve operations and resiliency

Project Roadmap

- Project Development: November 2025 – March 2026
- Staff Presentation: March 20, 2026
- Council Presentation: May 18, 2026
- Final Project Development: May 2026 – August 2026
- Project Approval: September 2026
- Engineering and Construction: October 2026 – September 2028
- Project Completion and Ribbon Cutting: October 2028

Contact Information



Ashu Jain, P.E.

Sr. Sales Executive
c. (714) 473-7837
ajain@esg.email

Jacob Goering

Preconstruction Manager
c. (909) 810-0697
jgoering@esg.email

Brandon Baik, P.E., CEM

Energy Engineer
c. (714) 905-4295
bbaik@esg.email

Kahea Kanuha, P.E.

Engineering Manager
c. (808) 937-8657
kkanuha@esg.email

Kok Lim

Preconstruction Developer
c. (808)634-6064
klim@esg.email

Amelia Cottrell

Sr. Business Development Manager
c. (616) 901-6183
acottrell@esg.email

Appendix

About Energy Systems Group



+30 YEARS
in business

+910 successful
infrastructure projects

+400 employees
nationwide

Our Accreditations



\$6.7 BILLION+ IN
INFRASTRUCTURE
IMPROVEMENTS &
SERVICES

ESG in California



Municipalities ■

- City of Arroyo Grande
- City of Bell Gardens
- City of Carson City
- City of Cotati
- City of Duarte
- City of Grover Beach
- City of Hawaiian Gardens
- City of Hercules
- City of Lemoore
- City of San Leandro

Federal ▲

- Marine Core Logistics Base Barstow
- Coronado Naval Base
- Presidio of Monterey
- Beale Air Force Base
- Veterans Affairs Medical Centers (CA)
 - Mather
 - McClellan
 - Martinez
 - Palo Alto
 - Livermore
 - Menlo Park
 - Fresno
 - San Francisco

K-12 ●

- Antelope Valley UHSD
- Arcadia USD
- Belmont-Redwood Shores SD
- Beverly Hills USD
- Buena Park SD
- Centinela Valley USD
- Centralia ESD
- Chino Valley USD
- Colton JUSD
- Coronado USD
- Downey USD
- Duarte USD
- East Whittier CSD
- El Centro ESD
- El Monte UHSD
- El Rancho USD
- Evergreen SD
- Fairfield-Suisun USD
- Galt JUHSD
- Garvey SD
- Hawthorne SD
- Huntington Beach CSD
- La Canada USD
- Las Virgenes USD
- Lawndale ESD
- Lennox SD
- Los Alamitos USD
- Menifee USD
- Moorpark USD
- Moreno Valley USD
- Mountain Empire USD
- Murrieta Valley USD
- Nuview BECHS
- Nuview Union SD
- Nuview USD
- Oak Park USD
- Ocean View SD
- Palos Verdes PUSD
- Poway USD
- Redondo Beach USD
- Rosemead SD
- Samueli Academy
- Saugus USD
- South Pasadena USD
- Torrance USD
- Tustin USD
- Union SD
- Upland USD
- Visalia USD
- Walnut Valley USD
- Westside USD

Integrated Energy & Infrastructure Solutions for Water & Wastewater Facilities:

- AMI water meter deployment and leak detection
- Pump and motor efficiency upgrades
- SCADA and controls modernization
- Solar and battery storage systems, microgrids and EV charging infrastructure
- Blower and aeration upgrades
- Digester improvements
- Biogas recovery and cogeneration (CHP)
- HVAC and building efficiency retrofits
- Tertiary treatment and water reuse projects
- Nutrient recovery
- Biosolids management
- Odor control improvements
- WWTP expansion and upgrades

ESG bridges the gap between concept and realization, bringing industry-leading expertise in implementing a comprehensive suite of turnkey solutions with a focus on measurable technical, financial, and operational results.



City of Lemoore, CA

Scope of Work Included:

- Solar PV for 2 sites
- LED Lighting City-wide
- HVAC & Controls City-wide
- Backup Power & Resiliency for 2 Sites
- EV Chargers for 3 Sites
- Parking Lot Upgrades for 1 Site
- AMI Water Meter City-Wide
- SCADA at the WWTP
- VFDs at Sewer & Storm Lift Stations
- WWTP Improvements:
 - VDFS on influent pumps at the old and new headworks
 - Backup power (standby generator) to influent pumps and headworks equipment
 - Replace the manual bar rack in the headworks channel with a mechanical screen and compactor
 - Provide additional aerators in the treatment ponds

Results:

- Modernize city infrastructure
- Increase revenue and reduce operating costs with AMI water meters
- Advance Smart City capabilities
- Deliver multiple projects through a single, efficient program
- Improve reliability of critical facilities
- Secure \$876k in grants and incentives
- Reduce maintenance staff burden

Net savings of \$14.8 million over project life

Lemoore leads with Smart Innovation

By integrating energy, water, wastewater, and facility technologies into a connected digital network, Lemoore stands out as a forward-thinking city built for tomorrow



California Government Code 4217

Energy project procurement

Authorizes public agencies to approve energy projects without traditional RFP when projected savings exceed project costs, enabling a compliant and faster procurement path

Quick. Easy. Reliable.



TRUSTWORTHY PARTNER

Reduce risk, simplify coordination through single, accountable partner who manages the entire effort



END-TO-END DESIGN-BUILD

We cover engineering, construction, project management, rebate admin, and long-term performance tracking



QUICK DELIVERY OF IMPROVEMENTS

Capture energy savings, operational benefits sooner



CONTRACT ASSURANCE

Performance, guaranteed savings, and quality of workmanship built into the contract

KEY ADVANTAGES

Working with ESG

ESG conducts a full competitive procurement process for every major component of your program, including:

- Equipment sourcing
- Construction and installations
- Financing options

Key Advantages working with ESG:

- Develops energy project development competently at risk
- No change orders unless the agency chooses to add or remove scope
- Significantly faster project implementation
- Lower administrative burden on staff
- Prevailing wage compliance
- Work with local subcontractors utilized whenever feasible to support the community