BENEFITS AND RISKS OF SAN JOSÉ PROVIDED ELECTRIC DISTRIBUTION SERVICE

San José City Council

Special Meeting – September 16, 2022

Lori Mitchell, Director
Jim Caldwell, Deputy Director
Marcos Santiago, Power Resources Specialist
Doug Boccignone, Principal at Flynn RCI

SAN JOSE CLEAN ENERGY
A Program of the City of San José

MAYOR AND COUNCIL DIRECTION

- **On June 12, 2019,** the Rules and Open Government Committee directed Community Energy to hold a Council Study Session to inform the Council and educate the public about the challenges that San José, and other Northern California cities, face regarding maintaining electric reliability and resilience.

- **On August 29, 2019,** the City Council held a Study Session discussing general options to improve the resilience, reliability, and efficiency of electric service including the possibility of forming a City owned microgrid to serve Downtown West.

- **On October 23, 2019,** the Rules Committee approved a memorandum by Mayor Sam Liccardo titled “PSPS: Making San José Grid-Resilient” that included many recommendations and directions to staff to explore various methods to improve grid resiliency.

PREVIOUS PUBLIC MEETINGS

- **On February 10, 2020,** City Council authorized the City Manager to file a Wholesale Transmission Service Interconnection Application to begin exploration of the option to provide City electrical service to the Downtown West Project.

- **On March 25, 2021,** City Council held a Study Session discussing three options for operating a district systems microgrid to provide electric service to the Downtown West Project.
  1. PG&E retail/Community Microgrid Enablement Program (CMEP) service,
  2. City provided service, and
  3. Google, The Downtown West Project Developer (Developer), provided service

- **On May 25, 2021,** as part of a Supplemental Memorandum related to the Development Agreement for the Downtown West Project, City Council was provided with information regarding the initial legal, regulatory, and economic feasibility as well as the potential benefits and risks of City provided electric service to new developments such as the Downtown West Project.

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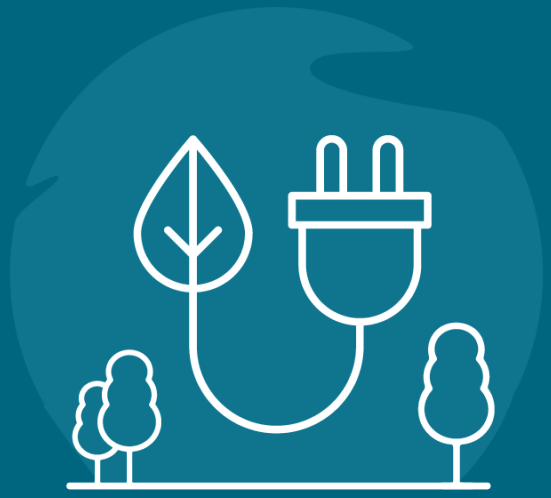
OUTLINE

- GRID RESILIENCY
- PUBLIC UTILITIES
- CASE STUDY OF DOWNTOWN WEST
- CONCLUSIONS AND NEXT STEPS

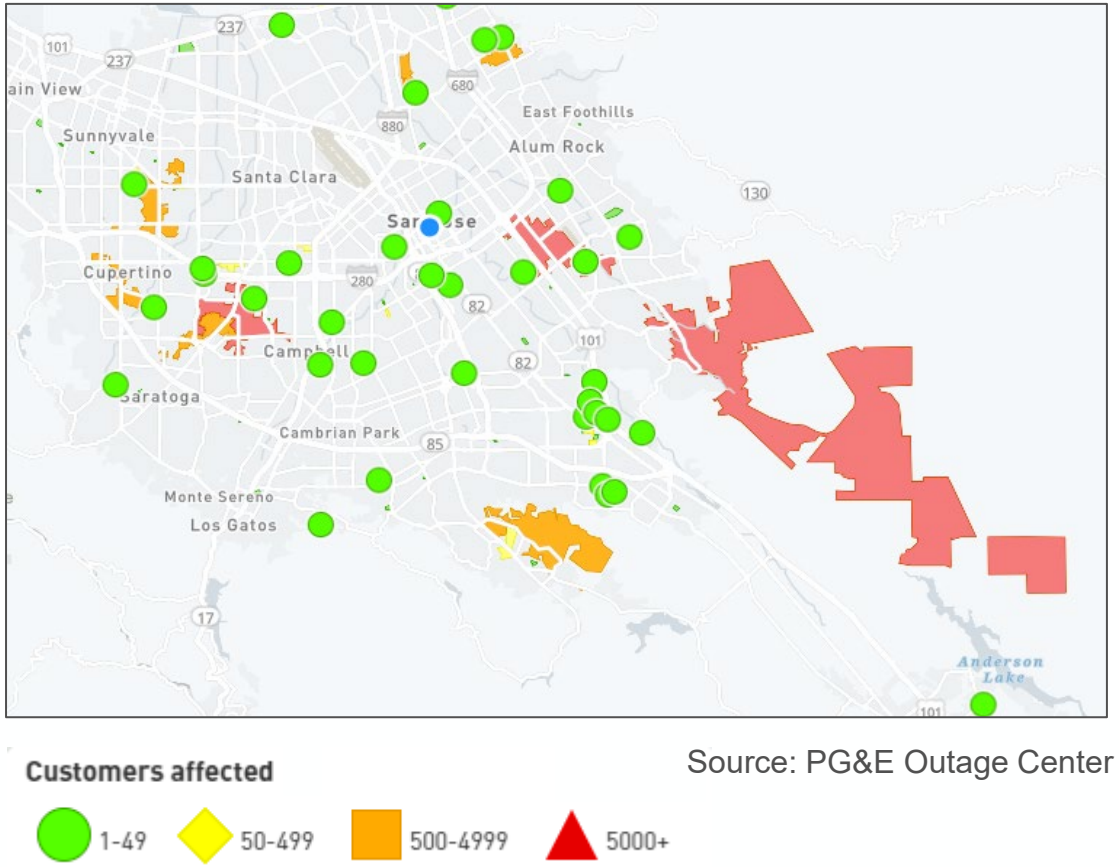


GRID RESILIENCY

RELIABILITY CONCERNS IN SAN JOSÉ

- Distribution outages due to high heat
  - August 14-15, 2020:
    - 573 separate distribution outages that impacted 250,000 residents
  - August 18, 2020
    - Substation outage near downtown impacted over 10,000 customers
  - September 2-9, 2022
    - 9/6 - nearly 100,000 residents impacted including 3 hospitals
    - 9/7 – nearly 22,000 residents impacted

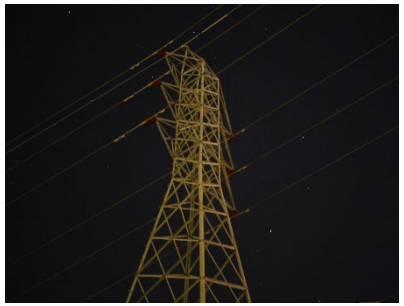
PG&E Outages at 5:30pm on September 6, 2022

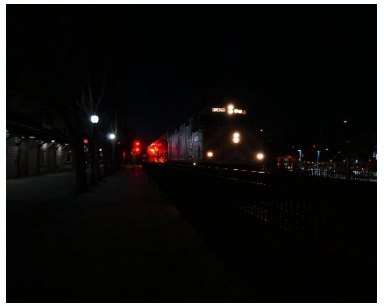


Source: PG&E Outage Center

PSPS & ROLLING OUTAGES

- Planned PG&E outages caused by wildfire mitigation measures
  - PSPS – Public Safety Power Shutoffs
  - EPSS – Enhanced Power Line Safety Settings
- Rolling blackouts from generation shortage during high demand
  - Called by California Independent System Operator (CAISO)
  - Occurred statewide on August 14 and 15, 2020: San José not impacted
  - Almost needed during recent heatwave September 2-9, 2022: prevented through conservation
- Increasing concern as loads rise and heat storms become more frequent and severe





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POWER OUTAGE IMPACTS

- Life and Safety:
  - Exposure to severe weather
    - Heat / cold related illness and death
  - Strains on critical facilities relying on backup power
  - Inability to power life-supporting medical devices
  - Lack of refrigeration; medicine and food spoilage
  - Traffic safety issues
- Economic:
  - Lost productivity
  - High greenhouse gas emissions

Source: San José Spotlight

Source: CBS News Bay area

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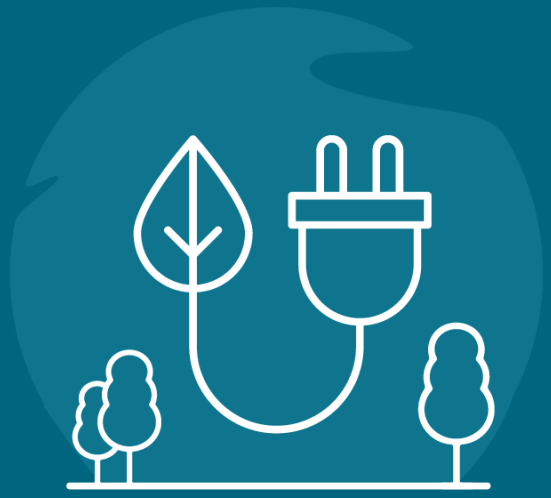
GRID RESILIENCY

- The Federal Energy Regulatory Commission (FERC) defines resilience as:
  - *"The ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event."*

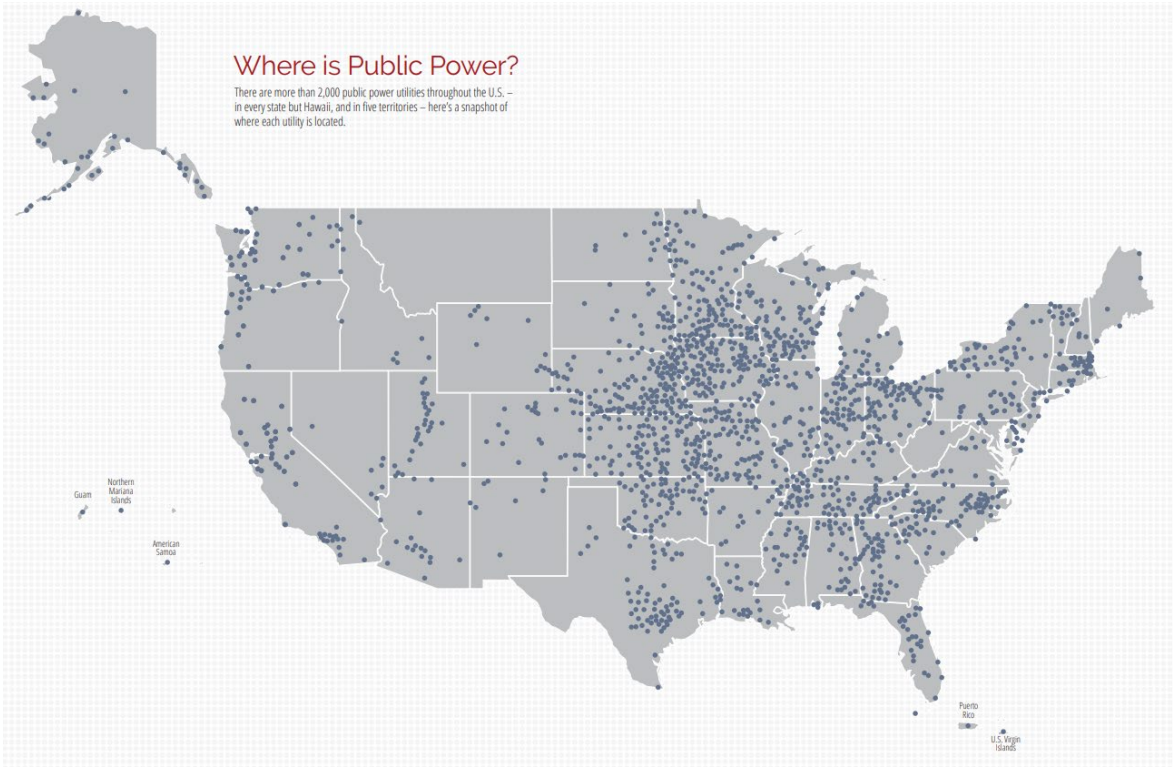
- For San José, this means:
  1. Having a more robust local distribution network with reduced failures and improved access for customer owned generation (solar + storage).
  2. Having sufficient transmission capacity to allow for growth and extreme weather.
  3. Protecting critical loads with local clean generation and storage (microgrids).
  4. More local control of electric service for new developments



PUBLIC UTILITIES

PUBLIC UTILITIES IN THE UNITED STATES

- Over 2000 US Publicly Owned Utilities
- 1 in 7 Americans served by public utilities
- Proven model provides higher reliability
- Reinvest revenues back into their communities through:
  - Offering lower rates
  - Payments in lieu of taxes
  - Providing local jobs
  - Supporting local programs



Source: www.publicpower.org/public-power/stats-and-facts

PUBLIC UTILITIES IN CALIFORNIA

- 46 Publicly Owned Utilities in California
- Serve 25% of Californians
- Largest: SMUD (Sacramento region) & LADWP
- Small: Healdsburg, Shasta Lake, Lompoc
- Medium: Santa Clara, Palo Alto, SF, Pasadena, Anaheim, Roseville

Source: California Energy Commission

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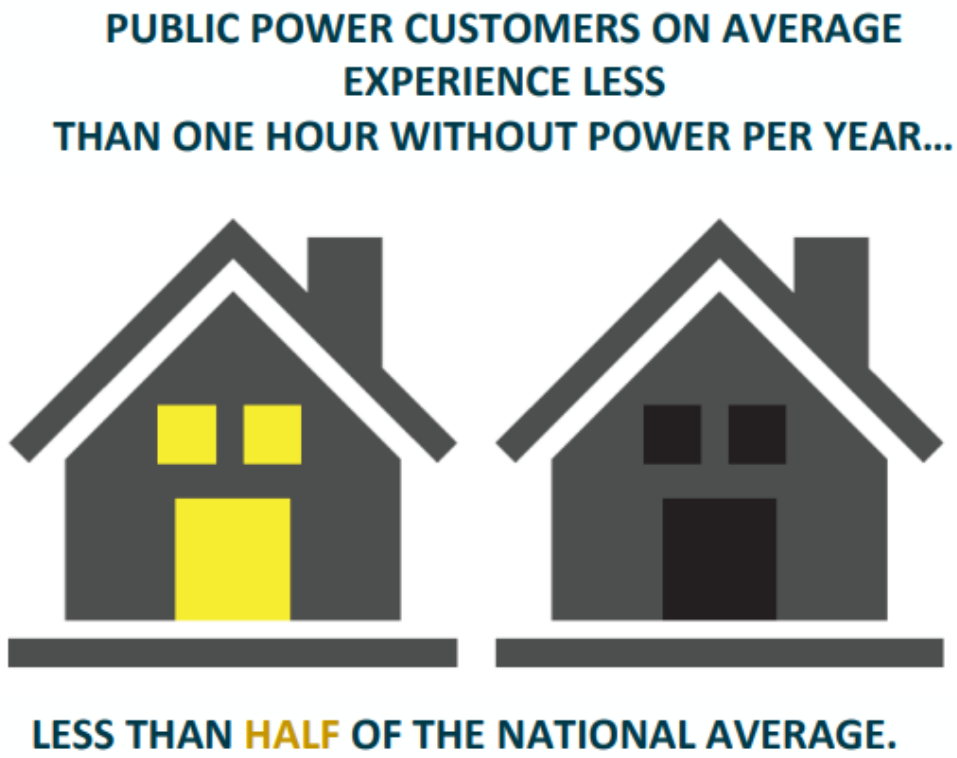
PUBLIC POWER IS MORE RELIABLE

Outage Duration	Public Power	National Average
Average	58 minutes	143 minutes
Median	40 minutes	126 minutes



Source: American Public Power Association

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PUBLIC POWER IS LOWER COST

California Municipalities	CA Residential Public Power Costs vs IOUs	CA Commercial Public Power Costs vs IOUs
Silicon Valley Power (City of Santa Clara)	48% Lower	26%-38% Lower
Sacramento Municipal Utility District	33% Lower	31.1%-47.6% Lower
Alameda Municipal Power	14.9%-31.5% Lower	11.3%-18.9% Lower
Los Angeles Department of Water and Power	31% Lower	7-27% Lower

	CA Public Power Costs vs IOUs (2017)
Residential rates	17.4% lower
Commercial rates	14.7% lower

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Source: American Public Power Association

EXAMPLE: SILICON VALLEY POWER

- Serves the City of Santa Clara
- Provides cleaner energy to residents and businesses
  - 100% Carbon Free for all residents
- Governed by Santa Clara City Council
- Rates are 26-48% lower than investor-owned utility
- Municipal Utility owns distribution assets for the entire city
  - 374 miles underground
  - 186 miles overhead

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Source: Silicon Valley Power

EXAMPLE: ALAMEDA MUNICIPAL POWER

- Governed by the Alameda Public Utilities Board
- Rates are 31-49% lower than Investor-Owned Utility
- Municipal utility owns distribution assets for the entire City of Alameda

Source: Robert Campbell – U.S Army Corps of Engineers Digital Visual Library

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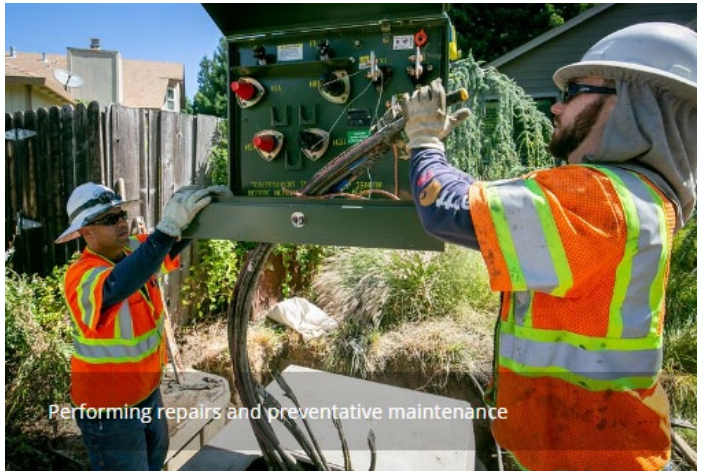
Source: Alameda Municipal Power: Alameda Municipal Power's Load Forecast for FY 2023

EXAMPLE: CITY OF HEALDSBURG

- Serves 5,793 meters in the City of Healdsburg
- Governed by Healdsburg City Council
- Rates are approximately 33% lower than investor-owned utility
- Municipal utility owns and maintains:
  - 28 miles of underground lines and 28 miles of overhead lines
  - Badger substation, 800 transformers, 1300+ streetlights


Performing repairs and preventative maintenance

Testing Meters

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Source: City of Healdsburg

EXAMPLE: ISLAND OF KAUAI

- Local ownership and control led to active customer participation in grid modernization/decarbonization
- Resulted in:
  - Improved reliability
  - Lower rates
  - Faster modernization compared to other Hawaiian islands
- Utility learned by doing and leads the world in actual implementation of grid of the future
  - Transitioned from 0 to ~90% carbon free in 5-7 years. Current challenge is the last mile

Source: Honolulu Civil Beat

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Source: IEEE Power and Energy Magazine (Nov/Dec 2019

EXAMPLE: CITY OF GONZALES

- City of Gonzales formed a municipal utility in 2022 to support a microgrid.
- New distribution system to be constructed in parallel with existing distribution system.
- Designed with significant local renewable and fossil generation in excess of expected load.
- Supports full load for indefinite period in islanded mode.
- Startup planned for 2024.

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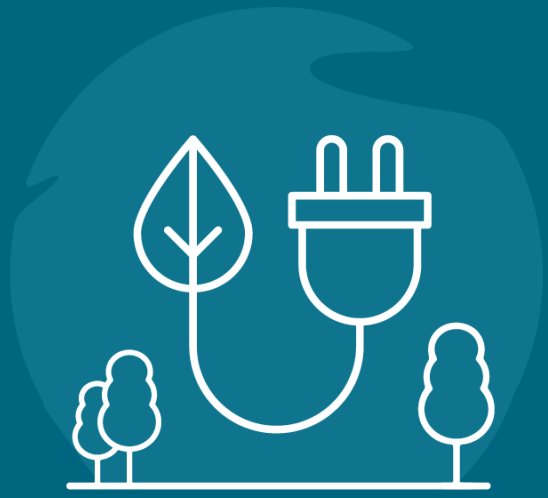
BENEFITS OF CITY ELECTRIC SERVICE

- Enables more clean energy and helps achieve Climate Smart Goals
- Enables design flexibility
  - grid modernization and integration of smart grid technologies
- Enables more customer demand response and load shaping
- Improves resiliency by enabling a more advanced microgrid
- Allows for equitable distribution of benefits to both residents and commercial customers in the development
- Potentially reduces costs

PATHWAY FOR CITY ELECTRIC SERVICE

- City can exercise authorities under State Law and City Charter to provide power to new developments in San José
- City worked with Flynn Resource Consultants Inc. to study the potential for San José Electric Distribution Service
- Used the Downtown West Project as a Case Study
- Case Study concluded that San José can own and operate distribution system infrastructure through a City-owned Electric Utility
- City utility service encompasses:
  - Ownership, operation, maintenance of local electrical facilities
  - Customer service and billing
  - Rate setting and developing tariffs



A CASE STUDY OF THE DOWNTOWN WEST MIXED-USE DEVELOPMENT

THE DOWNTOWN WEST DEVELOPMENT

- Proposed by Google in August 2019
- Mixed-use development, approximately 80 contiguous acres
  - Estimated 7.3M sq ft office, 500K sq ft retail, 4,000 housing units

LEGEND

- Office
- Residential
- Land dedicated to City for affordable housing
- Land dedicated to City for Unentitled DSAP potential affordable housing
- Active use (retail, cultural, arts, education etc.)
- Parks + plazas + green spaces
- Downtown West Project Boundary

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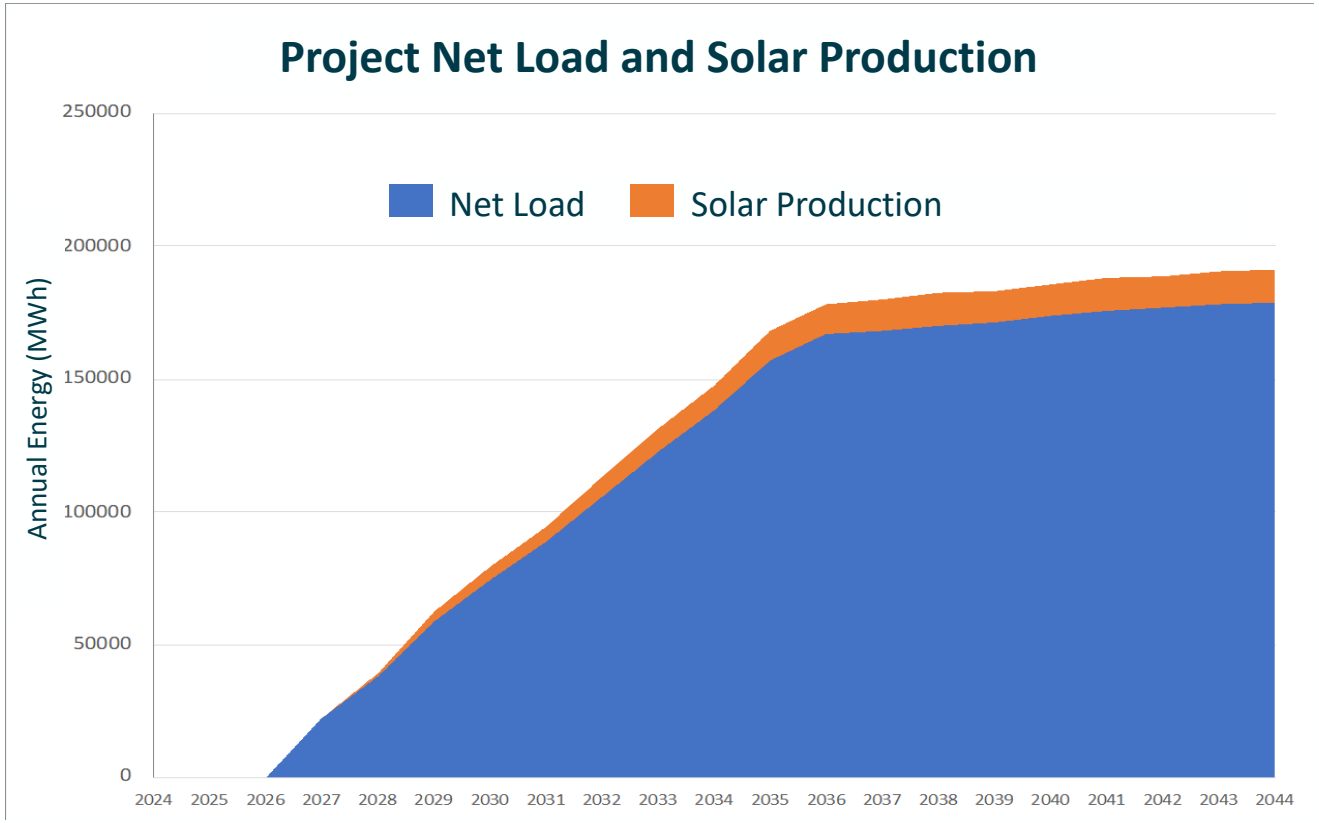
PROPOSED MICROGRID CAPABILITIES

- 7.8+ MW of Solar
- 15.6+ MWh of Battery storage
- 39 MW load at full buildout
- Shared resources between buildings
  - Not allowed under current CPUC regulations
- Microgrid can supply power to certain critical loads for extended outage without using backup diesel generation



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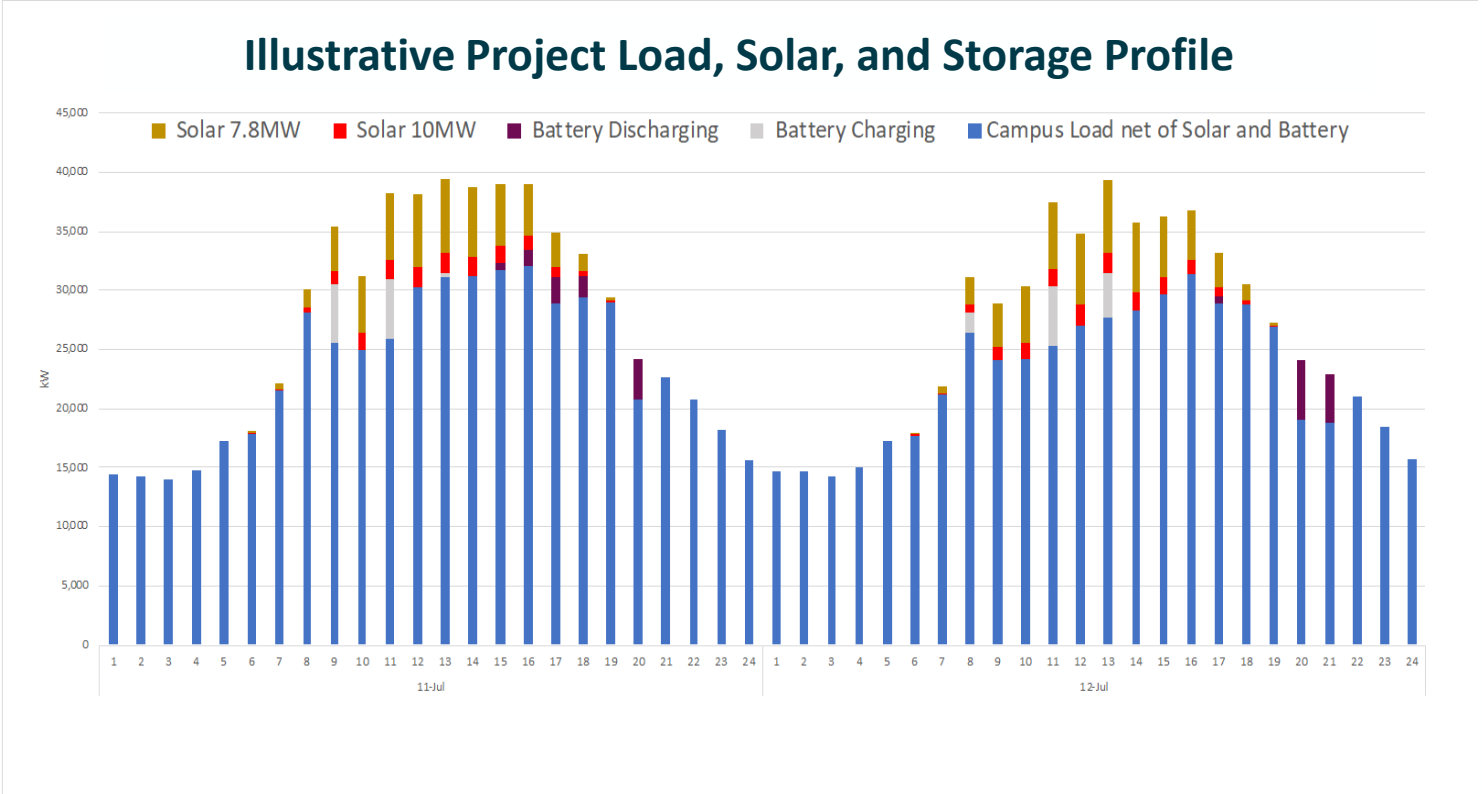
OPERATION ON HOT SUMMER DAY

- On site solar and storage dispatched to reduce load during 4-9pm peak hours
- Lowers energy cost and capacity requirements
- Highlights importance of ability to share energy between buildings



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ECONOMICS OF THE CASE STUDY

ECONOMIC ANALYSIS ASSUMPTIONS

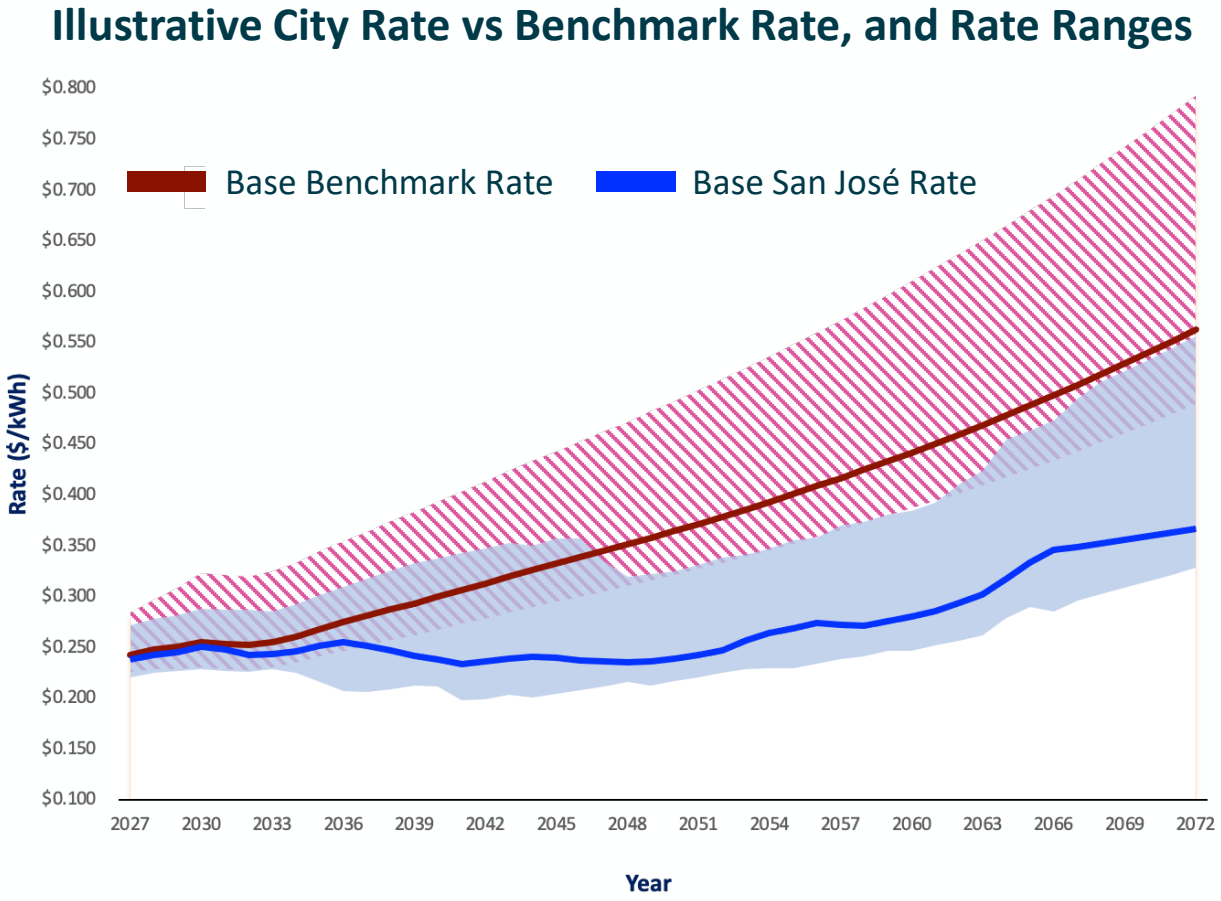
- Developer constructs infrastructure and turns it over to the utility for ownership and operation
- Developer funds start-up costs
- Financial model compared costs to status quo (benchmark) distribution service
- Benchmark rates includes system hardening costs due to wildfire mitigation and modernization of existing distribution system
- Benchmark rates are assumed to only rise at inflation after 2030
- Energy supplied is 24 x 7 carbon-free for benchmark and City Utility rates
- Rates for a City Utility based on cost of service

COST DRIVERS

Cost Driver	Description	Base Case Assumptions
Benchmark Delivery Rates	Change in benchmark can affect apparent competitiveness.	Current rates plus anticipated system hardening costs. Escalation at inflation after 2030.
Annual Energy Usage (Load)	A large portion of costs are fixed. More load means average cost can be lower.	Forecast provided by developer: first service in 2027, full buildout in 2044.
Staffing	Costs of salaries and benefits to operate and manage utility.	Staff hiring corresponds to load growth. Staffing costs supported by developer until 2032.
Departing Load Charges	City's view is that PCIA is not applicable.	To be conservative, includes PCIA departing load charge.

ANALYSIS FINDINGS

- Comparable rates at launch, with developer funded startup costs
- Expected costs 15-25% below benchmark over 50-year period
- Unfavorable scenarios could result in City Utility rates 5-10% greater than benchmark
- Favorable scenarios could result in City Utility rates 30-50% lower than benchmark
- Range of benchmark rates in red and City utility rates in blue



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RISKS AND MITIGATIONS

RISKS AND MITIGATIONS

- Lessons learned from San José Clean Energy launch resulted in more conservative analysis and more rigorous stress testing

- Three main risks were identified
  1. Accuracy of the load forecast
  2. Uncertainty around future benchmark rates
  3. Staffing levels

- Mitigation strategies were identified for each risk

RISK 1: ACCURACY OF THE LOAD FORECAST

- Gradual load growth in the early years creates low revenue to cover fixed costs in early years
- Loads lower than forecast magnify this and prolong initial operations phase
- Mitigation:
  - Developer provides start-up funding; City utility to reimburse these funds over time only as load grows and revenue increases
  - If load growth is slower than expected, reimbursement of start up funding is delayed
  - Not a Risk for customers outside of the City utility or on the City general fund
- Less of a concern for future developments served by established City utility

RISK 2: BENCHMARK RATE UNCERTAINTY

- Difficult to predict benchmark rates over the 50-year study period
- Benchmark rates will likely increase significantly due to wildfire mitigation and modernization of the statewide transmission and distribution system
  - Study included estimates for these costs based on known rate filings and public data
  - To be conservative, benchmark rates escalated at inflation after 2030
- State may change how these costs are recovered, reducing the difference between the City utility and benchmark rates
- Mitigation:
  - Perform the cost-of-service study closer to when service begins (2026) to inform the decision to provide City service
  - Startup period is longer for this service than SJCE; recommend checking that rates are competitive before significant hiring and providing this new service

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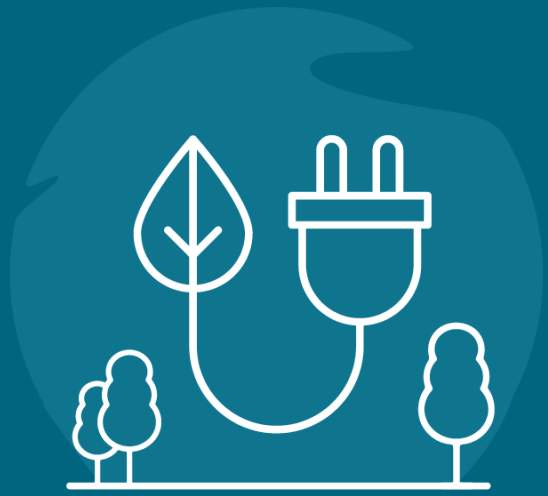
RISK 3: HIGH STAFFING LEVELS

- Higher staffing levels than expected may be needed to achieve desired service and safety levels
- Mitigation:
  - Operations & maintenance and staffing plan developed well in advance of utility startup
  - Close coordination with the developer to align timing of hiring with the build out of the project, reducing costs in startup years
  - Startup period is longer for this service than SJCE; recommend checking that rates are competitive before significant hiring and providing this new service

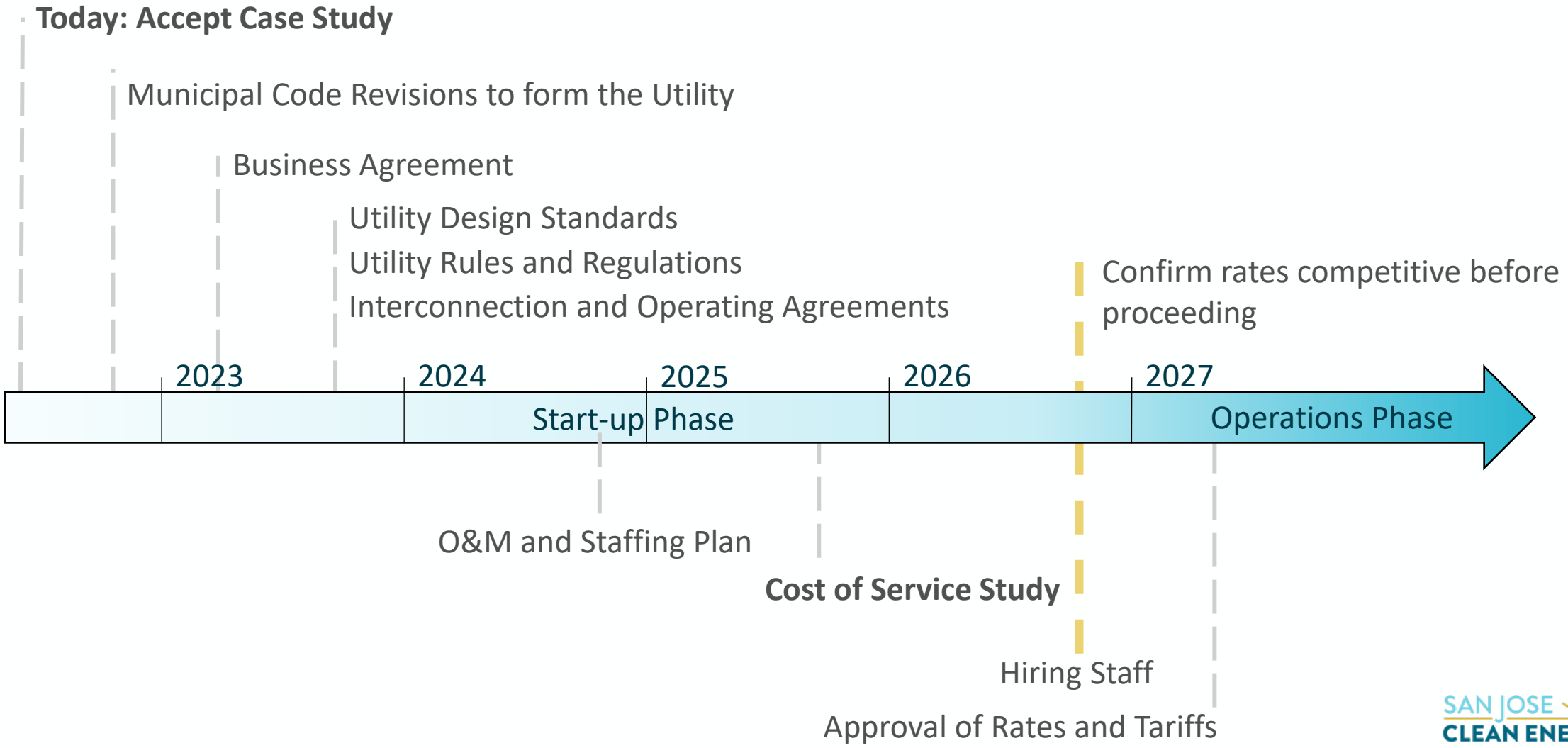
RISK 4: DEPARTING LOAD CHARGES (PCIA)

- Departing load charges create additional costs and reduce savings
- The City's view is that PCIA is not applicable
  - The power charge indifference adjustment (PCIA) is meant to compensate remaining IOU customers for the above market costs of the IOU's portfolio
  - This is a new development; customers are not departing. The IOU should not have procured above market resources to serve this new load
- Regulatory changes could occur that create new charges and costs
- Mitigation:
  - The analysis is conservative and includes PCIA charges
  - Challenge applicability of PCIA, based on existing rules and established precedent
  - Monitor regulatory proceedings and advocate on behalf of customers



CONCLUSIONS AND NEXT STEPS

START UP TIMELINE: NEXT 5 YEARS



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KEY CONCLUSIONS

- City electric service to downtown west could provide improve resiliency, clean energy, and lower rates for the development
- Financial risks for the startup remain principally with the Developer
- City electric service to other new developments may present similar benefits and opportunities
  - Important to confirm technical feasibility for new locations
- Important findings:
  - Proceeding with investigation and initial startup steps does NOT commit the City or the Developer
  - The cost-of service study should be a key driver of the decision to provide this service and should be performed closer to operations phase before significant hiring of staff

QUESTIONS?

- Review and Accept the Case Study
- Presenters:
  - Lori Mitchell, Director
  - Jim Caldwell, Deputy Director
  - Marcos Santiago, Power Resources Specialist
  - Doug Boccignone, Principal at Flynn RCI

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