



## IFMA INLAND EMPIRE CHAPTER

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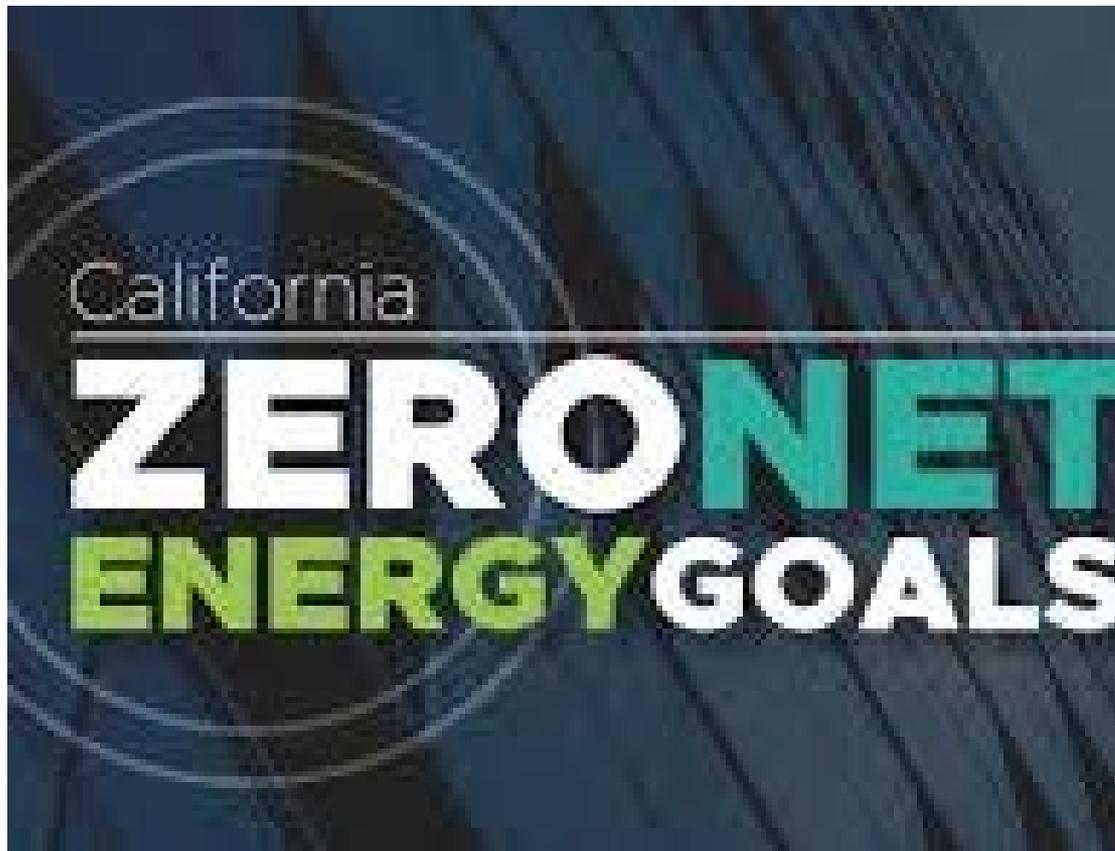


## How to Significantly Lower Your Commercial Building's Electric Bill





# California's Ambitious ZNE Goals

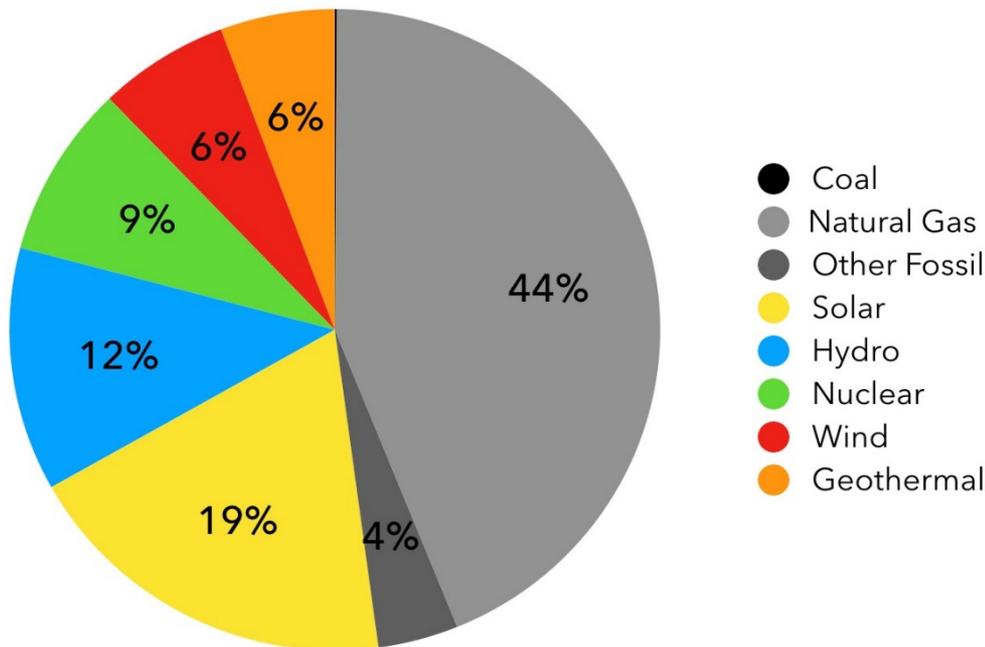


- AB 2514 – Incorporates energy storage into the electricity grid (plan)
- FERC Order 841 – Removes barriers to the participation of electric storage in wholesale markets (requirement)
- SB 100 – Is California's commitment to 100% clean energy by 2045 (target)



# California's Most Promising Renewable Energy Program is Distributed Energy Resources (DER)

## California's Energy Mix, 2018



Source: Data from U.S. Energy Information Agency referring to 2018

- Decentralized, modular, and flexible
- Located close to the load they serve
- Allows capacities up to 10 megawatts
- Managed and coordinated behind the meter
- Collection of energy from many sources
- Lowers environmental hazards and impacts
- Improves the security of electrical supply



# California's Clean Energy Technologies for Renewable Power

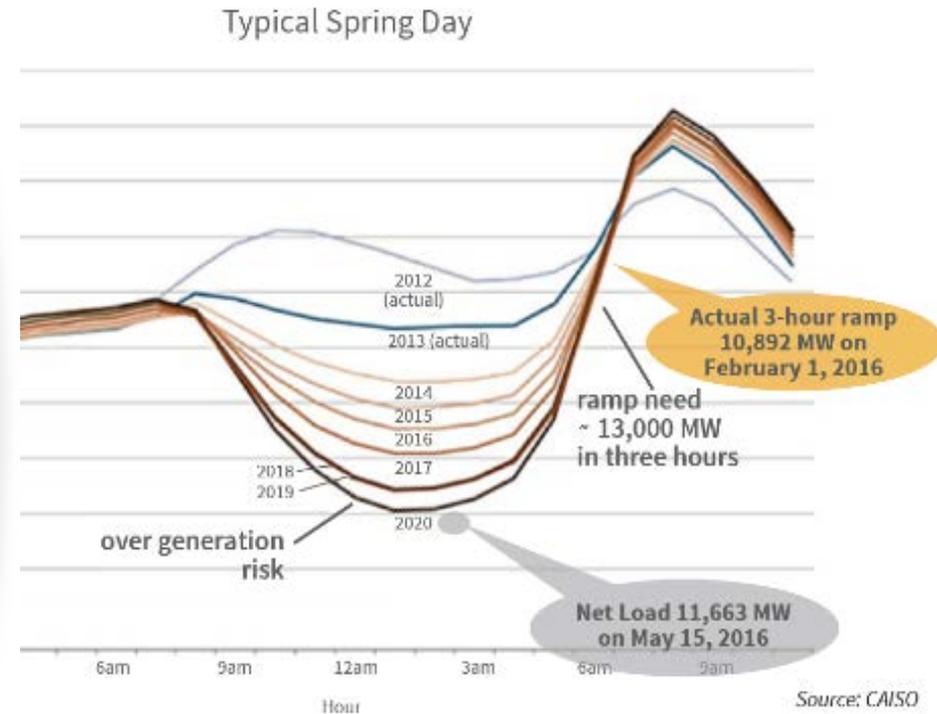
- Photo-voltaic (PV) solar
- Wind powered generators
- Hydro electric dams
- Energy storage systems (ESS)



# What is the 'Duck Curve'

## And welcome to the Solar Energy Paradox

- Solar production increases in the late morning hours and peaks around noon before tailing off in the late afternoon and early evening.
- This reduces demand for natural gas during the midday hours, when utilities traditionally imposed higher, on-peak TOU rates.
- Then, as solar power generation diminishes in the late afternoon hours, utilities face a spike in demand for power from natural gas peaker plants.
- This extreme energy use and power fluctuation is known in the energy industry as the 'Duck Curve.'



# Time-of-Use Shift

## Peak 4-9 pm Time-of-Use (TOU) Shift

- In response, California's utilities have begun adjusting their TOU rate schedules to account for the Duck Curve.
- San Diego Gas & Electric (SDG&E) shifted on-peak hours for its summer season to 4-9 pm, from its previous schedule of 11 am-6 pm in 2017.
- Pacific Gas & Electric (PG&E) and Southern California Edison (SCE) followed and shifted their on-peak hours in 2018 and 2019 to 4-9 pm.

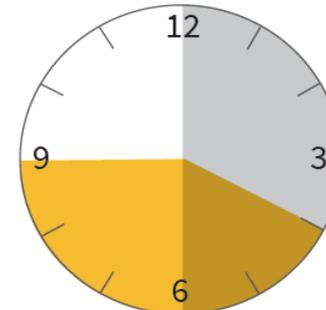
**SDG&E**  
*effective 2017*



**PREVIOUS**  
11am-6pm, May-Oct

**NEW**  
4pm-9pm, June-Oct

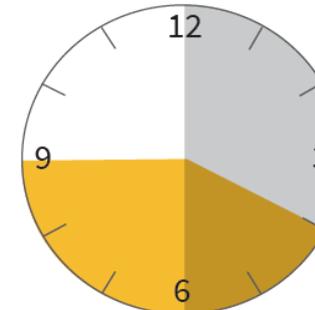
**SCE**  
*effective Feb 2019*



**PREVIOUS**  
12pm-6pm, June-Sept

**NEW**  
4pm-9pm, June-Sept

**PG&E**  
*effective Oct 2019*



**PREVIOUS**  
12pm-6pm, May-Oct

**NEW**  
4pm-9pm, June-Sept



# Developing a Sustainable Energy Buildings Plan (SEBP)

- The tactical objectives and outcomes of this program are to empower and enable FM's to develop their own Sustainable Energy Buildings Plan (SEBP).
- As part of a SEBP, an ESS and other clean energy systems can optimize efficient energy management in support of the primary purpose of the organization.
- MicroNOC's 25% off electricity cost partnering program, with no capital investment, a one-time \$5k registration fee, refundable security deposit, with site provided space for the BESS—is an excellent SEBP option.



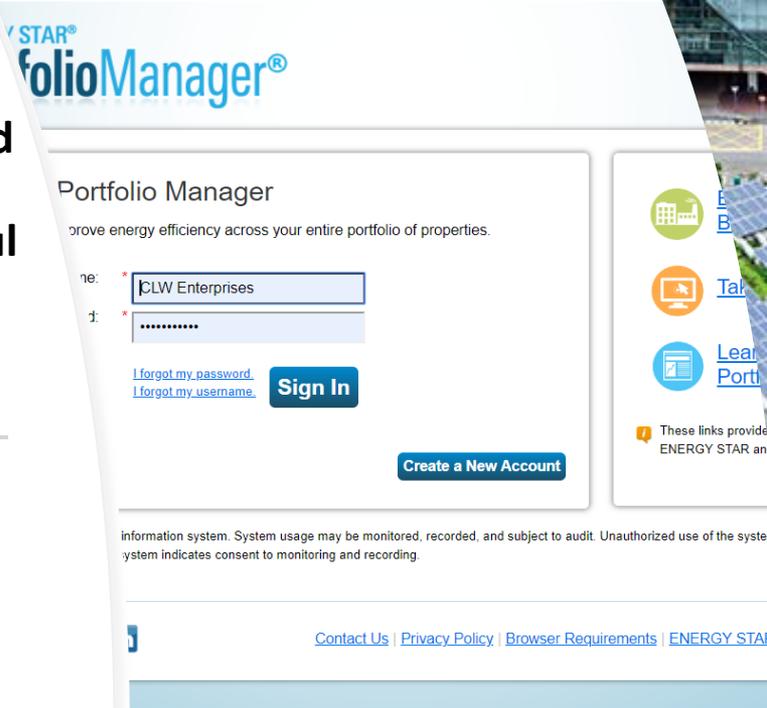
# Are Energy Storage Systems (ESS) the Best Option?

- As distributed energy resources (DER) become more economical for buildings, FM's are no longer reliant on solar energy and instead can utilize ESS without reliance on solar if not already available.
- With these new energy systems and the new technology to optimize, aggregate, and control their energy time of use (TOU) at the user side or behind the meter (BTM) for synchronization with the power grid's time of supply—the time to act is now more critical than ever.
- IFMA recognizes the importance of a SEBP and ESS and is featuring them in a 4 articles series for their 2020 *Facility Management Journal (FMJ)* magazine.

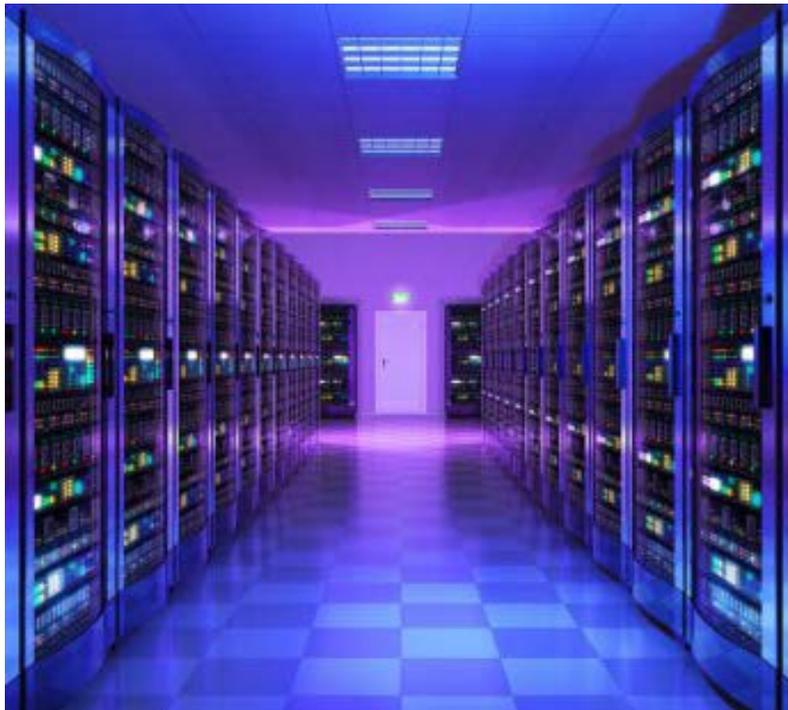


# The 4 Program Modules Summarized in IFMA's *FMJ* Article Series for a Successful Sustainable Energy Buildings Plan (SEBP)

- 1 - Planning and Project Management for Energy Savings
- 2 - Energy Sustainability for Real Estate, Property Management & Space Occupancy
- 3 - FM Leadership & Innovation for Sustainable Energy Buildings
- 4 - The Future of Sustainable Energy & Buildings for the Next Decade



# Example 1 – Improving Data Center Power Consumption & Energy Efficiency



- Clean virtual power (CVP) station
- Reduce cooling dependencies
- Experiment with temperatures
- Synchronize server capacity and load
- Identify and kill zombie servers
- Decrease or optimize space
- Find stronger supplier partnerships



# Example 2 – Improving Energy Efficiency and Lowering Costs in Biotech and Pharma



- Clean virtual power (CVP) station
- Reschedule HVAC system functions
- Upgrade HVAC equipment
- Install an energy management system (EMS)
- Upgrade to LED lighting



# Example 3 – An Energy Savings & Cost Reduction Prescription for Healthcare Facilities



- Clean virtual power (CVP) station
- Upgrade to LED lighting
- Commit to HVAC modifications
- Tackle a chiller plant retrofit
- Optimize your building management system (BMS)
- Evaluate your data center for energy savings
- Consider a steam system retrofit



# Example 4 – Managing Refrigeration & Lighting Electricity Costs in Grocery Stores



- Clean virtual power (CVP) station
- Occupancy sensors and reduced lighting
- Perform energy audits and retro-commissioning
- EMS and IoT controlled refrigerated equipment
- Upgrade to more efficient lighting technologies
- Use ENERGY STAR qualified equipment



**Resource Textbook for FM's,  
Operations & Maintenance,  
Teachers and Students**

*Chapters included:*

- 1 – ENERGY Savings Introduction*
- 2 – Your Electrical ENERGY Future is Now*
- 3 – Electrical ENERGY Saving Systems for Building*
- 4 – Potential ENERGY Cost Savings*
- 5 – Sustainable ENERGY Buildings Plan*
- 6 – ENERGY and Buildings Management Software*
- 7 – ENERGY Surveys, Inspections, Audits and Commissioning*
- 8 – ENERGY Benchmarking Using Portfolio Manager*
- 9 – ENERGY Efficient Lighting*
- 10 – ENERGY Efficient HVACR Systems*
- 11 – California's Time-of-Use ENERGY Rate Changes*
- 12 – ENERGY Code Compliance Measures*
- 13 – ENERGY Certifications for Facilities and Managers*
- 14 – Securing an ENERGY Savings Plan Budget*
- 15 – Your ENERGY Savings Dashboard*

# ENERGY

## Cost Savings For Facilities



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