

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

November 2-3, 2016
Bellevue, WA

Utility Rates and Incentives 101

AKA the Corey and Phill Show

Hosted by:



Presentation Overview

- Basic commercial electric rate charges
- Basic commercial natural gas charges
- Utility Custom Incentives
- Measure Examples

Basic Commercial Electric Rate Structure

- **Basic Charge**
 - Fixed charge that covers the costs for meter reading, billing, and other costs that do not vary with usage
- **Energy Charge**
 - The energy that is consumed by the facility, typically billed in kWh or kilowatt hours
- **Demand Charge**
 - Demand is a charge based on your maximum or peak rate of using energy typically billed in kW or kilowatts

Additional Commercial Electric Rate Charges

- **Power Factor or Reactive Power**

- Apparent or Reactive energy consumed that is present with inductive or capacitive loads -- motor loads, lighting ballasts, and transformers
- Charged as kVAR, kVARh, or, PF “Penalty” as part of the demand charge
- SCE does not charge for Power Factor Correction

- **Miscellaneous Charges**

- Various charges and credits -- may be usage based or fixed charges

Example Commercial Electric Bill

				WINTER		SUMMER	
BASIC CHARGE				\$	54.27	\$	54.27
DEMAND CHARGE	125 KW						
First	50 KW	x	\$	-	\$ -	\$ -	\$ -
Remaining	75 KW	x	\$	9.02	\$ 676.50	\$ 6.02	\$ 451.50
ENERGY CHARGE	30,000 kWh						
First	20,000 kWh	x	\$	0.097578	\$ 1,951.56	\$ 0.089291	\$ 1,785.82
Remaining	10,000 kWh	x	\$	0.071664	\$ 716.64	\$ 0.071664	\$ 716.64

OTHER CHARGES & CREDITS

POWER COST ADJUSTMENT	30,000 kWh	x	\$	(0.001370)	\$ (41.10)	\$ (0.001370)	\$ (41.10)
FEDERAL WIND POWER CREDIT	30,000 kWh	x	\$	(0.002360)	\$ (70.80)	\$ (0.002360)	\$ (70.80)
ELECTRIC CONS. PROGRAM CHARGE	30,000 kWh	x	\$	0.004079	\$ 122.37	\$ 0.004079	\$ 122.37
MERGER CREDIT	30,000 kWh	x	\$	(0.000266)	\$ (7.98)	\$ (0.000266)	\$ (7.98)
RENEWABLE ENERGY CREDIT	30,000 kWh	x	\$	(0.000065)	\$ (1.95)	\$ (0.000065)	\$ (1.95)
				Subtotal	\$ 3,399.51	Subtotal	\$ 3,008.77
				Effect of city tax (if any)		Effect of city tax (if any)	
				Total Bill	\$ 3,399.51	Total Bill	\$ 3,008.77

Example Commercial Electric Rate



Southern California Edison
Rosemead, California (U 338-E)

Revised Cal. PUC Sheet No. 60326-E
Cancelling Revised Cal. PUC Sheet No. 59129-E

Schedule TOU-8
TIME-OF-USE - GENERAL SERVICE - LARGE

Sheet 12

(Continued)

RATES (Continued)

SERVICE METERED AND DELIVERED AT VOLTAGES ABOVE 50 KV

Option B	Delivery Service								Generation ⁹	
	Trans	Distrbn	NSGC ³	NDC ⁴	PPPC ⁵	DWRBC ⁶	PUCRF ⁷	Total	UG ⁸	DWREC ¹⁰
Energy Charge - \$/kWh/Meter/Month										
Summer Season - On-Peak (0.00044)	0.00224	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.05971	(0.00022)
Mid-Peak (0.00044)	0.00224	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.04069	(0.00022)
Off-Peak (0.00044)	0.00224	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.02757	(0.00022)
Winter Season - On-Peak	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mid-Peak (0.00044)	0.00224	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.03975	(0.00022)
Off-Peak (0.00044)	0.00224	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.03182	(0.00022)
Customer Charge - \$/Meter/Month		2,102.75						2,102.75		
Demand Charge - \$/kW of Billing Demand/Meter/Month		4.38								
Facilities Related		3.38						7.76		
Time Related									16.49	
Summer Season - On-Peak		0.00						0.00	3.04	
Mid-Peak		0.00						0.00		
Winter Season - Mid-Peak		0.00						0.00	0.00	
Off-Peak		0.00						0.00	0.00	
Power Factor Adjustment - \$/kVAR		0.47						0.47		
Voltage Discount, Demand, 220 kV - \$/kW										
Facilities Related		(3.38)						(3.38)		
Time-Related										
Summer		0.00						0.00	(0.10)	
Voltage Discount, Energy, 220 kV - \$/kWh		0.00000						0.00000	(0.00036)	

- * The ongoing Competition Transition Charge (CTC) of \$(0.00007) per kWh is recovered in the UG component of Generation.
- 1 Trans = Transmission and the Transmission Owners Tariff Charge Adjustments (TOTCA) which are FERC approved. The TOTCA represents the Transmission Revenue Balancing Account Adjustment (TRBAA) of \$(0.00036) per kWh, Reliability Services Balancing Account Adjustment (RSBAA) of \$0.00004 per kWh, and Transmission Access Charge Balancing Account Adjustment (TACBAA) of \$(0.00012) per kWh.
- 2 Distrbn = Distribution
- 3 NSGC = New System Generation Charge
- 4 NDC = Nuclear Decommissioning Charge
- 5 PPPC = Public Purpose Programs Charge (includes California Alternate Rates for Energy Surcharge where applicable.)
- 6 DWRBC = Department of Water Resources (DWR) Bond Charge. The DWR Bond Charge is not applicable to exempt Bundled Service and Direct Access Customers, as defined in and pursuant to D.02-10-063, D.02-02-051, and D.02-12-082.
- 7 PUCRF = The PUC Reimbursement Fee is described in Schedule RF-E.
- 8 Total = Total Delivery Service rates are applicable to Bundled Service, Direct Access (DA) and Community Choice Aggregation Service (CCA Service) Customers, except DA and CCA Service Customers are not subject to the DWRBC rate component of this Schedule but instead pay the DWRBC as provided by Schedule DA-CRS or Schedule CCA-CRS.
- 9 Generation = The Generation rates are applicable only to Bundled Service Customers.
- 10 DWREC = Department of Water Resources (DWR) Energy Credit - For more information on the DWR Energy Credit, see the Billing Calculation Special Condition of this Schedule.

Example Commercial Electric Rate

SERVICE METERED AND DELIVERED AT VOLTAGES ABOVE 50 KV

Option B	Delivery Service							Generation ¹		
	Trans ²	Distrib ³	NSGC ⁴	NDC ⁵	PPPC ⁶	DWRBC ⁷	PUCRF ⁸	Total ⁹	UG ¹⁰	DWREC ¹¹
Energy Charge - \$/kWh/Meter/Month										
Summer Season - On-Peak	(0.00044)	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.05971	(0.00022)
Mid-Peak	(0.00044)	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.04069	(0.00022)
Off-Peak	(0.00044)	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.02757	(0.00022)
Winter Season - On-Peak	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mid-Peak	(0.00044)	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.03975	(0.00022)
Off-Peak	(0.00044)	0.00224	0.00295	(0.00085)	0.00863 (I)	0.00539	0.00033	0.01825 (I)	0.03182	(0.00022)
Customer Charge - \$/Meter/Month		2,102.75						2,102.75		
Demand Charge - \$/kW of Billing Demand/Meter/Month										
Facilities Related	4.38	3.38						7.76		
Time Related										
Summer Season - On-Peak		0.00						0.00	16.49	
Mid-Peak		0.00						0.00	3.04	
Winter Season - Mid-Peak		0.00						0.00	0.00	
Off-Peak		0.00						0.00	0.00	
Power Factor Adjustment - \$/kVAR		0.47						0.47		
Voltage Discount, Demand, 220 kV - \$/kW										
Facilities Related		(3.38)						(3.38)		
Time-Related										
Summer		0.00						0.00	(0.10)	
Voltage Discount, Energy, 220 kV - \$/kWh		0.00000						0.00000	(0.00036)	

Bottom Line, Average Rate is About \$0.14

Basic Commercial Natural Gas Rate Structure

- **Basic Charge**
 - Fixed charge that covers the costs for meter reading, billing, and other costs that do not vary with usage
- **Gas Cost / Procurement Charge**
 - Market based rate for natural gas typically billed in therms or CCF
- **Delivery Charge**
 - Charge related to the construction, operation and maintenance of pipes, regulators, and other equipment necessary for the delivery of natural gas typically billed in therms or CCF

Additional Commercial Natural Gas Topics

- **Demand Charge**
 - Some rate schedules can have a demand charge
 - Typically Based on highest daily usage
 - For high base load facilities -- restaurants, pools, processes
- **Interruptible Rates**
 - Typically lower rate. If a back-up fuel, back-up heat source, or load can be interrupted
- **Transportation Rates**
 - Customer procures energy from supplier and uses utility distribution system to deliver to site

Example Commercial Natural Gas Bill

	BASIC CHARGE				\$	33.26
	NATURAL GAS					
	DELIVERY CHARGE	422 Therms	@	\$	0.395560	\$ 166.93
	GAS COST	422 Therms	@	\$	0.398770	\$ 168.28
	OTHER NATURAL GAS CHARGES & CREDITS					
	CONSERVATION PROGRAM CHARGE	422 Therms	@	\$	0.018050	\$ 7.62
	MERGER CREDIT	422 Therms	@	\$	(0.003040)	\$ (1.28)
	SUBTOTAL					\$ 374.81
	Effect of city tax ** (if any)		@			
	TOTAL BILL					\$ 374.81

Custom Energy Efficiency Incentives - PSE

- Cost-effective measures that have quantifiable energy savings
 - Electric Incentives (Non-Lighting) = \$0.20/kWh up to 70% of project or incremental cost
 - Electric Incentives (Non-Lighting) = \$0.30/kWh up to 70% of project or incremental cost
 - Natural Gas Incentives = \$5/therm up to 70% of project or incremental cost
- Typical custom measures include: lighting, VFDs, pump optimization, chiller upgrades, boiler replacements, and compressed air system upgrades



Efficiency Incentives - SCE

- All measures must be 10% over Title 24
 - Electric Incentives: Interior Lighting = \$0.03/kWh up to 50% of project cost, Exterior Lighting = \$90 - \$264 per fixture based on type and size
 - Electric Incentives: Non-Lighting are all custom and vary based on technology and location (PRP, Aliso Canyon), approx. \$.08/kWh
 - Natural Gas Incentives = SCE does not do gas, call Stan
- Typical custom measures include: LED lighting, VFDs combined with new pumps, everything else is calculated as a special case and may or may not be eligible
- Everything can change at any time based on program targets and CPUC review



Lighting Retrofit – Payback and Incentive - PSE

- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 4,200 hrs/yr
 - 100,000 kWh/yr
 - 23.8 kW/month
- **Cost Savings:**
 - 100,000 kWh/yr X \$0.0717 per kWh = \$7,170 per yr
 - 23.8 kW per month x \$7.52 per kW = \$179 per month (\$2,148 per year)
 - Annual Cost Savings = \$9,318 per year
- **Utility Incentive:**
 - 100,000 kWh/yr x \$0.20 per kWh/yr = \$20,000
- **Simple Payback w/ Incentive:**
 - 8.6 years



Lighting Retrofit – Payback and Incentive - SCE

- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 4,200 hrs/yr
 - 100,000 kWh/yr
 - 23.8 kW/month
- **Cost Savings:**
 - 100,000 kWh/yr X \$0.10 per kWh = \$11,000 per yr
 - 23.8 kW per month x \$7.76 per kW for 12 months + (\$16.49 + \$3.04) for 3 months = \$3,610.87 per yr
 - Annual Cost Savings = \$13,610.70 per year
- **Utility Incentive:**
 - 100,000 kWh/yr x \$0.03 per kWh/yr = \$3,000
- **Simple Payback w/ Incentive:**
 - 7.12 years



Lighting Retrofit – 24/7 Operation - PSE

- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 8,760 hrs/yr
 - 208,488 kWh/yr
 - 23.8 kW/month
- **Cost Savings:**
 - 208,488 kWh/yr X \$0.0717 per kWh = \$14,949 per yr
 - 23.8 kW per month x \$7.52 per kW = \$179 per month (\$2,148 per yr)
 - Annual Cost Savings = \$17,097 per year
- **Utility Incentive:**
 - 208,488 kWh/yr x \$0.20 per kWh/yr = \$41,498
- **Simple Payback w/ Incentive:**
 - 3.42 years



Lighting Retrofit – 24/7 Operation - SCE

- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 8,760 hrs/yr
 - 208,488 kWh/yr
 - 23.8 kW/month
- **Cost Savings:**
 - 208,488 kWh/yr X \$0.10 per kWh = \$20,848.80 per yr
 - 23.8 kW per month x \$7.76 per kW for 12 months + (\$16.49 + \$3.04) for 3 months = \$3,610.87 per yr
 - Annual Cost Savings = \$24,459.50 per year
- **Utility Incentive:**
 - 208,488 kWh/yr x \$0.03 per kWh/yr = \$6,254.64
- **Simple Payback w/ Incentive:**
 - 3.83 years



Chiller Example – Payback and Incentive - PSE



- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 1,500 full load hrs/yr
 - 100,000 kWh/yr
 - 66.7 kW/month
- **Cost Savings:**
 - 100,000 kWh/yr X \$0.0717 per kWh = \$7,170 per yr
 - 66.7 kW per month x \$7.52 per kW = \$502 per month (\$3,012 per yr)
 - Annual Cost Savings = \$10,182 per year
- **Utility Incentive:**
 - 100,000 kWh/yr x \$0.30 per kWh/yr = \$30,000
- **Simple Payback w/ Incentive:**
 - 6.9 years

Chiller Example – Payback and Incentive - SCE



- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 1,500 full load hrs/yr
 - 100,000 kWh/yr
 - 66.7 kW/month
- **Cost Savings:**
 - 100,000 kWh/yr X \$0.10 per kWh = \$10,000 per yr
 - 66.7 kW per month x \$7.76 per kW for 12 months + (\$16.49 + \$3.04) for 3 months = \$10,119.06 per yr
 - Annual Cost Savings = \$20119.06 per year
- **Utility Incentive:**
 - 100,000 kWh/yr x \$0.08 per kWh/yr = \$8,000
- **Simple Payback w/ Incentive:**
 - 4.57 years

Chiller Example – Payback and Incentive - PSE



- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 900 full load hrs/yr
 - 100,000 kWh/yr
 - 111 kW/month
- **Cost Savings:**
 - 100,000 kWh/yr X \$0.0717 per kWh = \$7,170 per yr
 - 111 kW per month x \$7.52 per kW = \$835 per month (\$3,340 per yr)
 - Annual Cost Savings = \$10,510 per year
- **Utility Incentive:**
 - 100,000 kWh/yr x \$0.30 per kWh/yr = \$30,000
- **Simple Payback w/ Incentive:**
 - 6.7 years

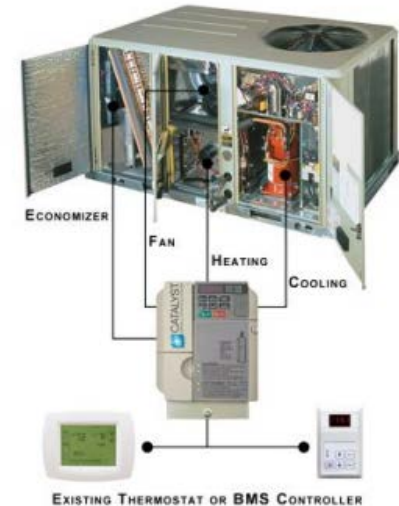
Chiller Example – Payback and Incentive - SCE



- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 900 full load hrs/yr
 - 100,000 kWh/yr
 - 111 kW/month
- **Cost Savings:**
 - 100,000 kWh/yr X \$0.10 per kWh = \$10,000 per yr
 - 111 kW per month x \$7.76 per kW for 12 months + (\$16.49 + \$3.04) for 3 months = \$16,839.81 per yr
 - Annual Cost Savings = \$26,839.81 per year
- **Utility Incentive:**
 - 100,000 kWh/yr x \$0.08 per kWh/yr = \$8,000
- **Simple Payback w/ Incentive:**
 - 3.43 years

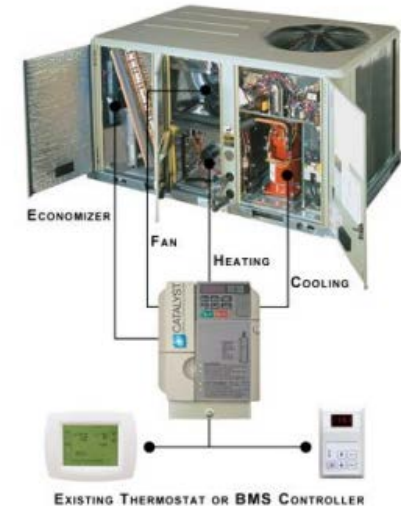
Advanced RTU Controls – Payback and Incentive - PSE

- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 4,200 hrs/year
 - 300,000 kWh/yr
 - 0 kW/month
- **Cost Savings:**
 - 300,000 kWh/yr X \$0.0717 per kWh = \$21,510 per yr
 - 0 kW per month x \$7.52 per kW = \$0 per month (\$0 per yr)
 - Annual Cost Savings = \$10,510 per year
- **Utility Incentive:**
 - \$100,000 X 70% of project cost = \$70,000
- **Simple Payback w/ Incentive:**
 - 2.9 years



Advanced RTU Controls – Payback and Incentive - SCE

- **Project Cost:**
 - \$100,000
- **Energy Savings:**
 - 4,200 hrs/year
 - 300,000 kWh/yr
 - 0 kW/month
- **Cost Savings:**
 - 300,000 kWh/yr X \$0.10 per kWh = \$30,000 per yr
 - 0 kW per month x anything per kW = \$0 per month (\$0 per yr)
 - Annual Cost Savings = \$30,000 per year
- **Utility Incentive:**
 - 300,000 X \$.08 of project cost = \$24,000
- **Simple Payback w/ Incentive:**
 - 2.53 years



The Corey and Phill Show

Thank You!