

Calculating & Projecting Avoided Costs to Comply with New RCA Regulations

James Keen

April 27, 2016

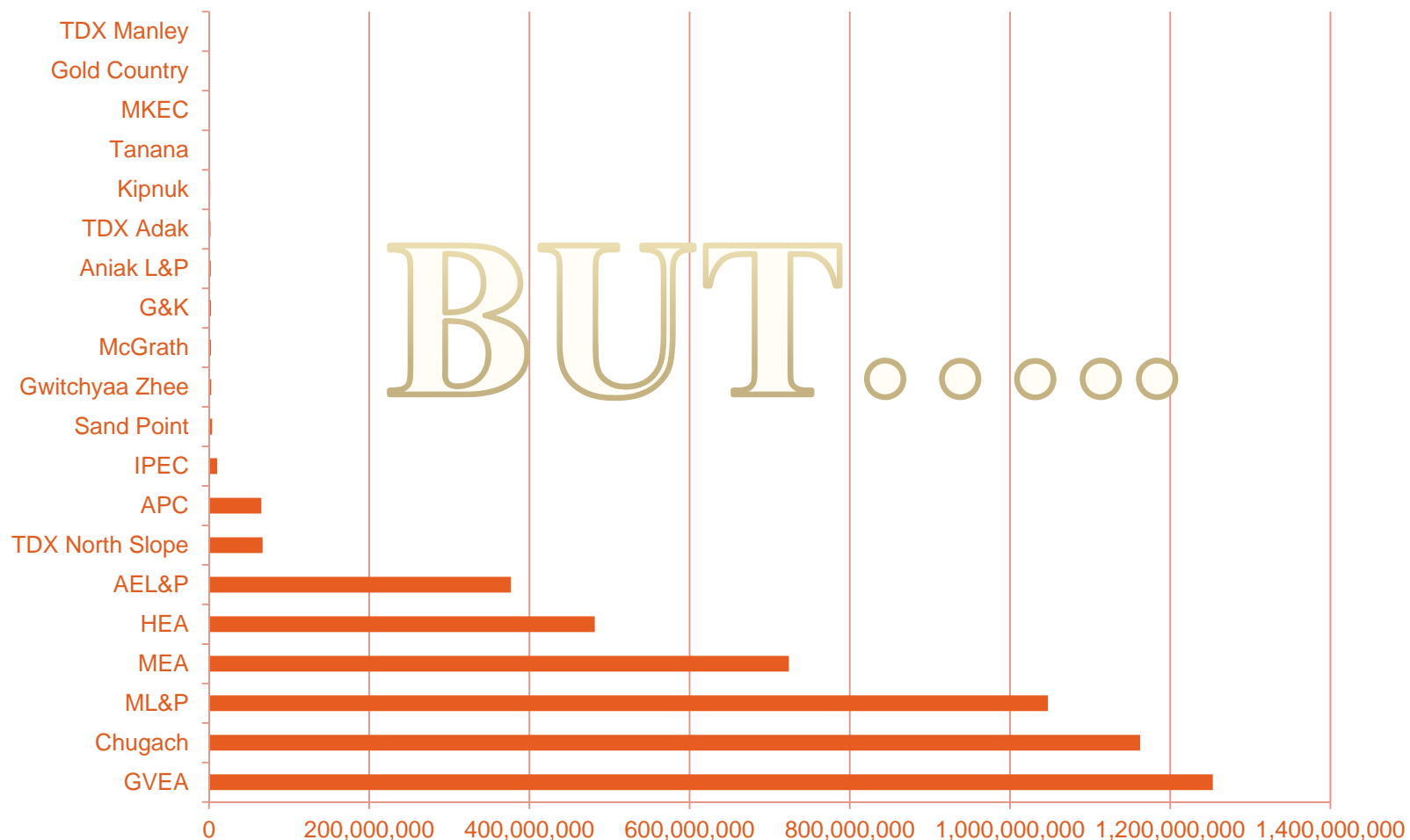
What new regulations?

- RCA Docket R-13-002 – Opened to consider a request for revisions to the RCA's long-standing rules for interactions between an electric utility and a Qualifying Facility
- The regulations were signed by the Lt. Gov. and became effective March 11, 2016

What is a Qualifying Facility?

- “Small” Power Production Facility that:
 - Is 80 MW or less (18 C.F.R. § 292.204(a))
 - Has a primary energy source that is renewable (hydro, wind, solar), biomass, waste or geothermal (18 C.F.R. § 292.204(b))
- or -
- Cogeneration Facility that:
 - Meets defined operational & efficiency criteria (18 C.F.R. § 292.205(a & b))
 - After August 2005: The output of the facility is used fundamentally for industrial, commercial, residential, or institutional purposes and not intended fundamentally for sale to an electric utility; or is 5 MW or less (18 C.F.R. § 292.205(d))

Who is affected?



Around 20 Economically Regulated Electric Utilities are affected

Who is affected?

- All retail electric utilities have a federally-mandated (FERC) obligation to interconnect and purchase power from QFs.
 - Every retail electric utility is required to have a standard-offer rate for purchasing energy from a 100 kW or smaller QF. (18 C.F.R. § 292.304(c))
 - Every retail electric utility is required to have projected avoided cost information that is updated every two years. (18 C.F.R. § 282.302(c))

What do the RCA regulations do?

Some high points...

- Align the RCA's rules more closely with federal (FERC) rules
- Describe power as “energy” and/or “capacity” rather than “firm” or “non-firm”
- Revise the methodology for calculating the standard-offer energy rate for small QFs (100 kW or less)
- Utilize the general FERC methodology for calculating avoided cost (greater than 100 kW), typically on a case-by-case basis
- Provide guidelines for calculating the costs/benefits of integration

What do the regulations require?

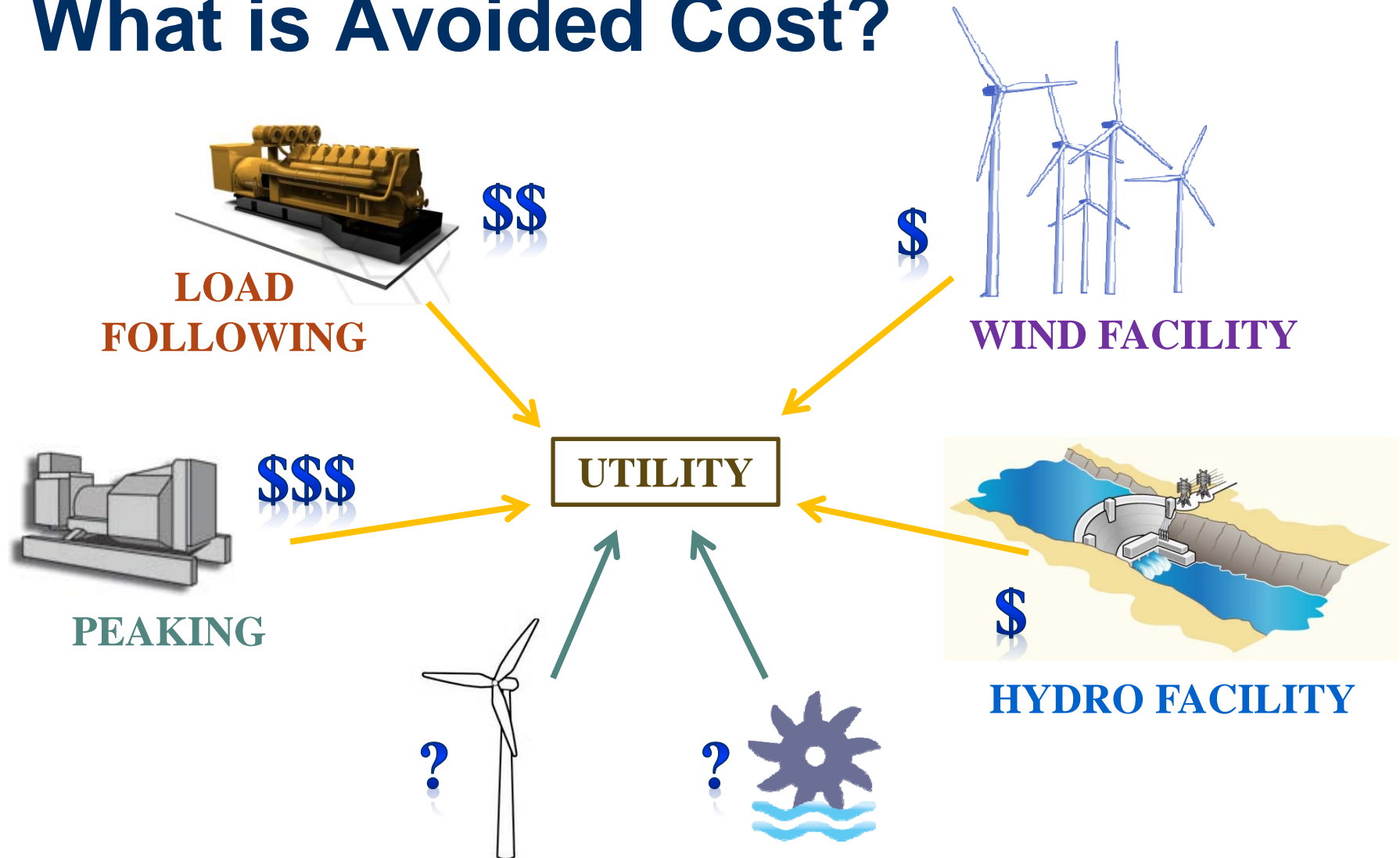
- **By April 1, 2016:**
 - Calculate a new standard-offer energy rate for small QFs (100 kW or less) using the new methodology.
 - Continue using this methodology going forward
 - Project avoided energy costs over a 5-year horizon and capacity and associated energy costs over a 10-year horizon.
 - Update every two years

What is Avoided Cost?

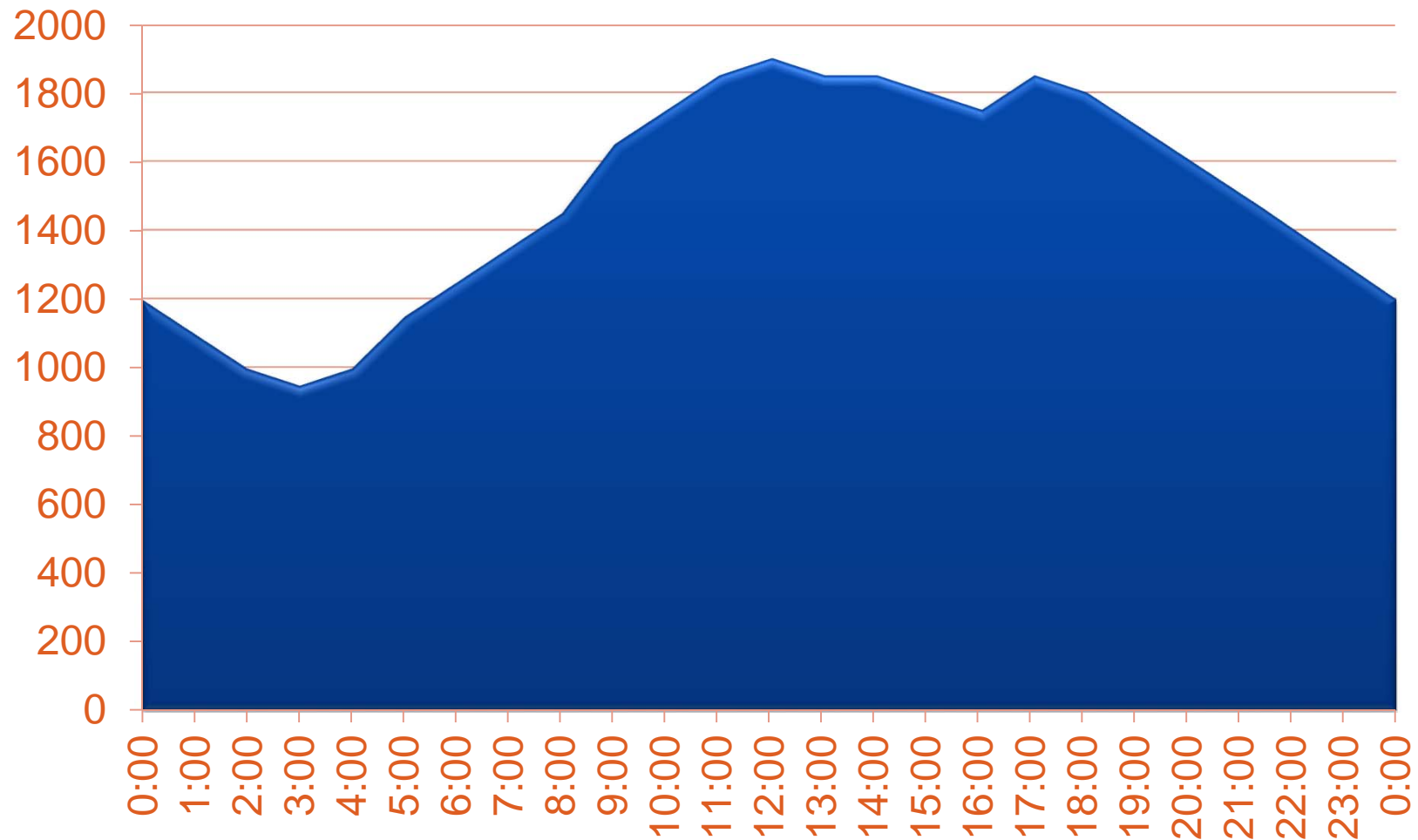
- “Avoided cost” means the incremental costs to an electric utility of electric energy or capacity or both which, but for the purchase from the QF, such utility would generate itself or purchase from another source (18 C.F.R. § 292.101(b)(6))



What is Avoided Cost?

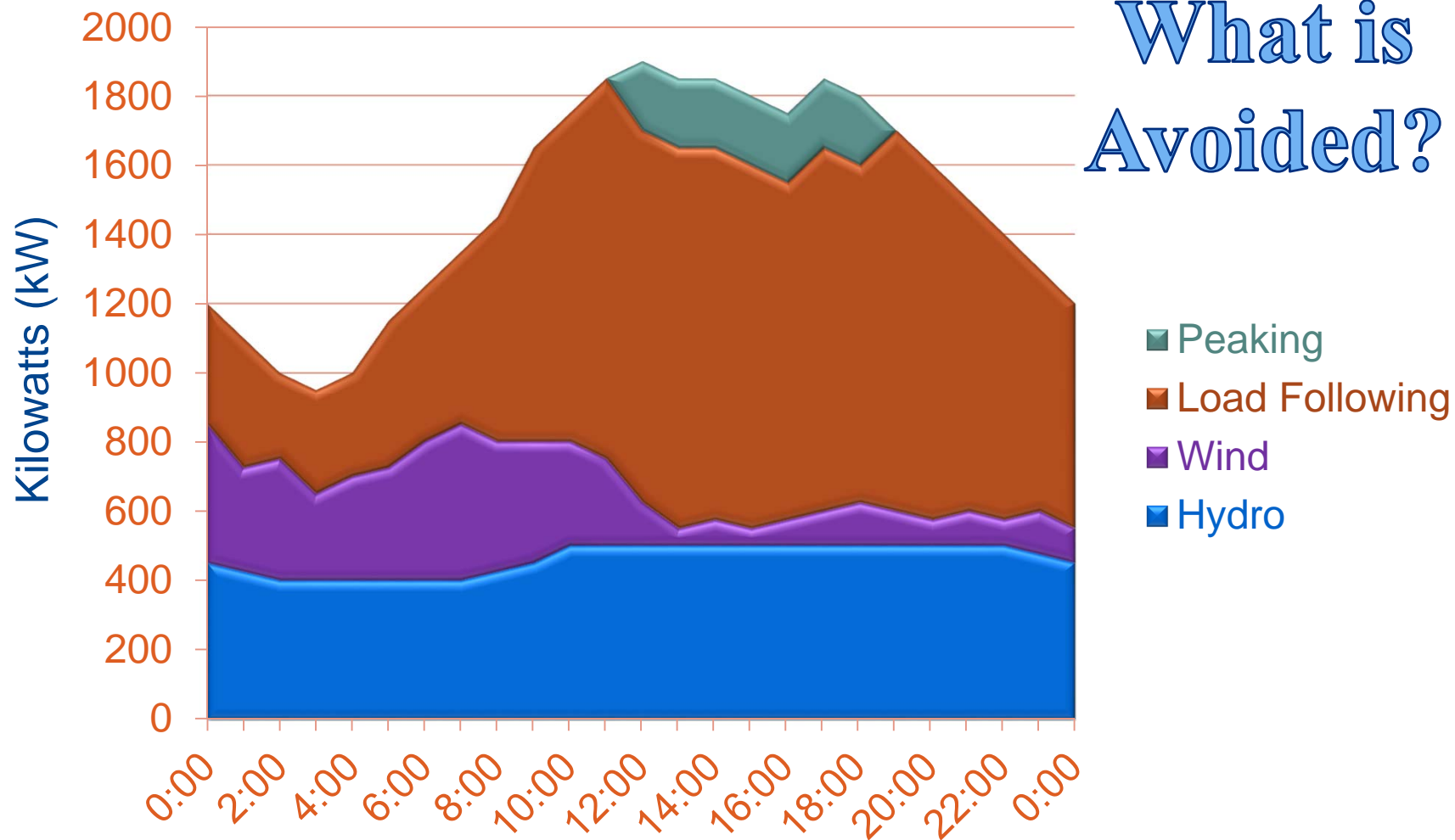


Sample Load Curve

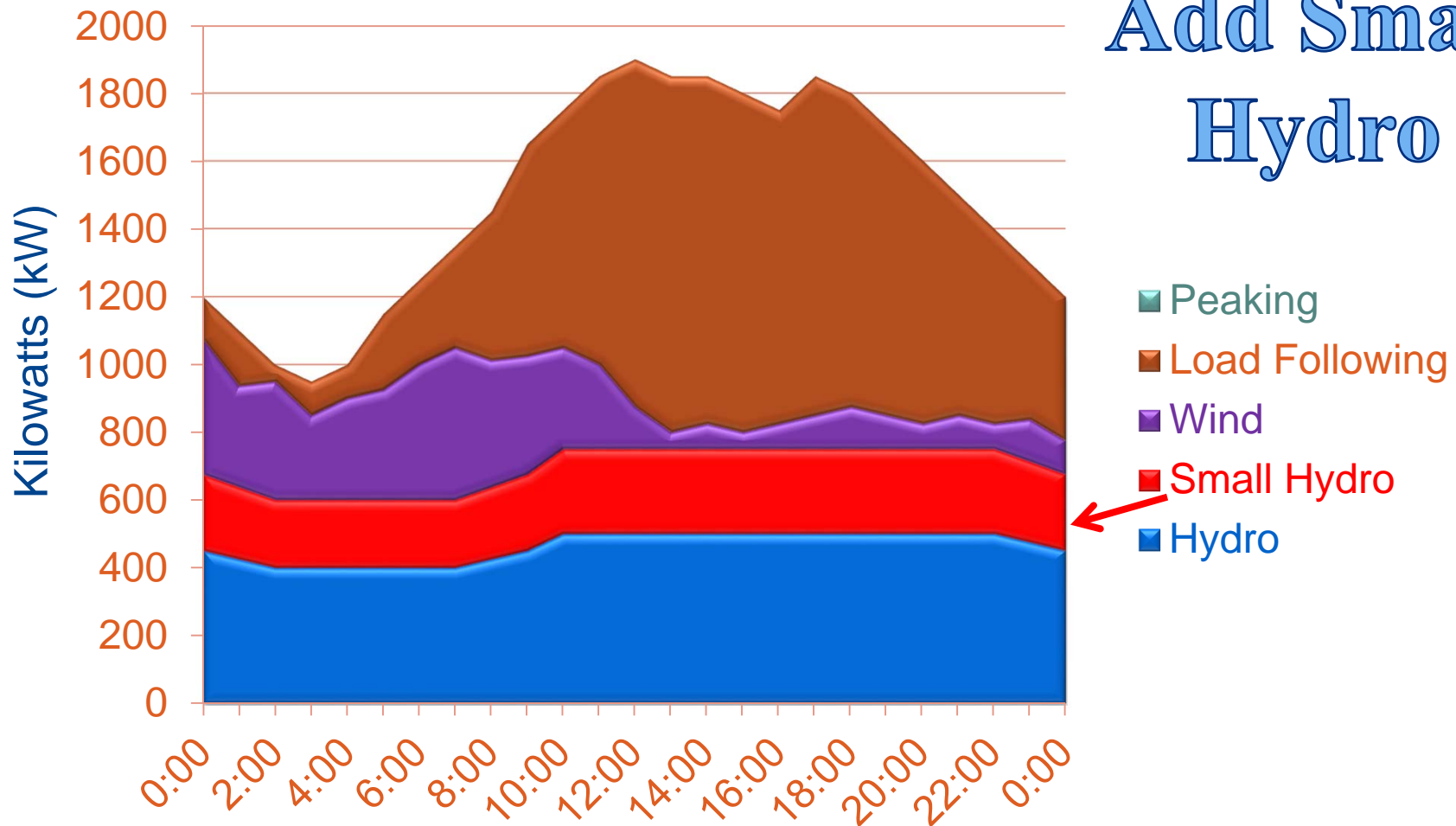


What is Avoided Cost?

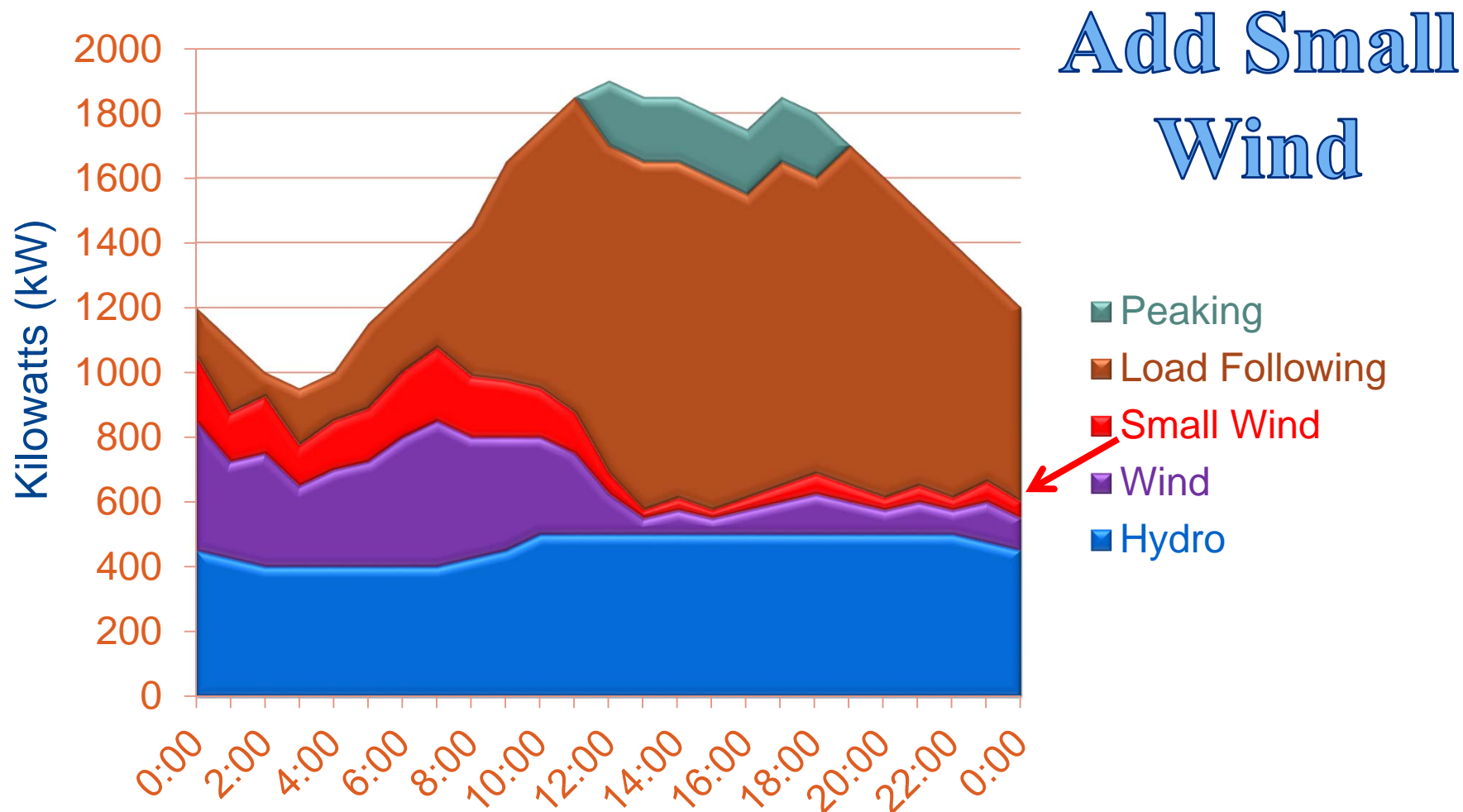
What is Avoided?



What is Avoided Cost?

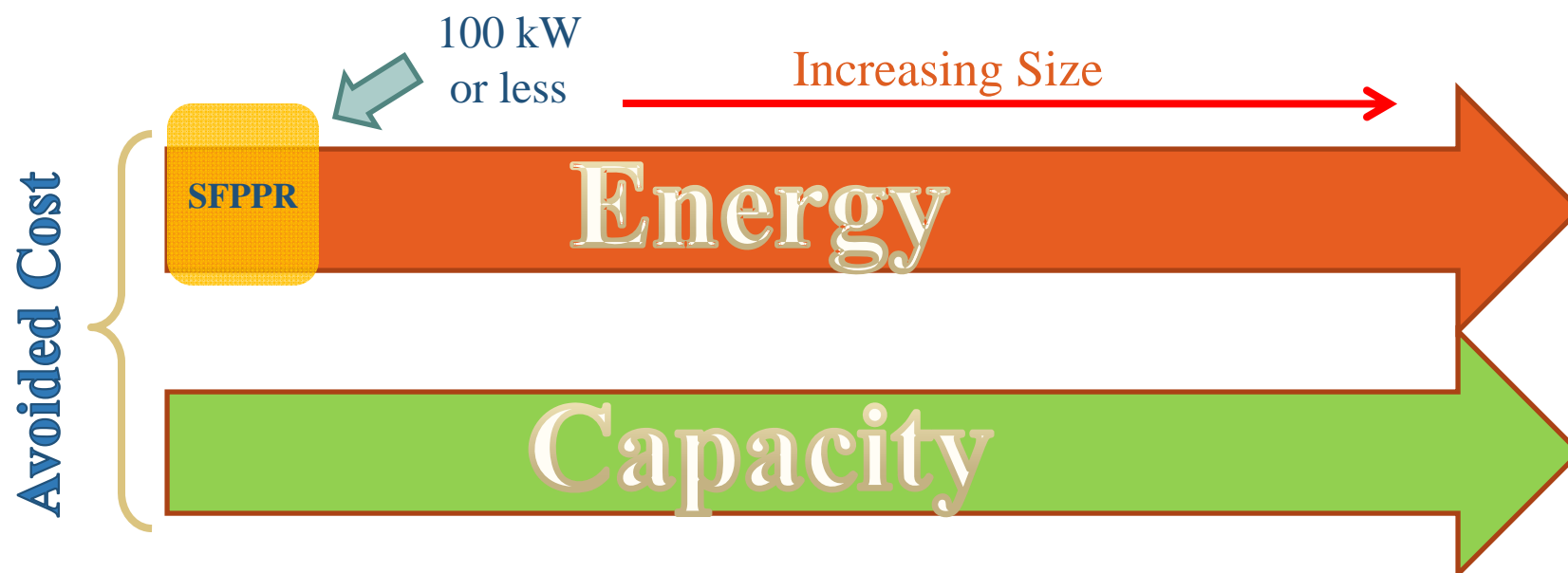


What is Avoided Cost?



Avoided Cost: Energy & Capacity

- Small Facility Purchase Power Rate (SFPPR) is the required standard-offer rate to be included in your tariff. It is the avoided cost calculation for QFs with a design capacity of 100 kW or less.
- All other avoided costs are typically calculated on a case-by-case basis and consider both energy and capacity avoidance.



Calculating the Small Facility Power Purchase Rate (SFPPR)

	Rate Components	Formula	Amount	Units
(A)	Amount of diesel used (historical quarter)	--	41,340	gallons
(B)	Current price of delivered diesel	--	\$ 3.17	\$/gallon
(C)	Fuel Costs (at current price)	A x B	\$ 131,048	
(D)	kWh sold (historical quarter)	--	390,500	kWh
(E)	Variable O&M	--	0.20	¢/kWh
	Small Facility Power Purchase Rate	$(100 \times (C / D)) + E$	33.76	¢/kWh

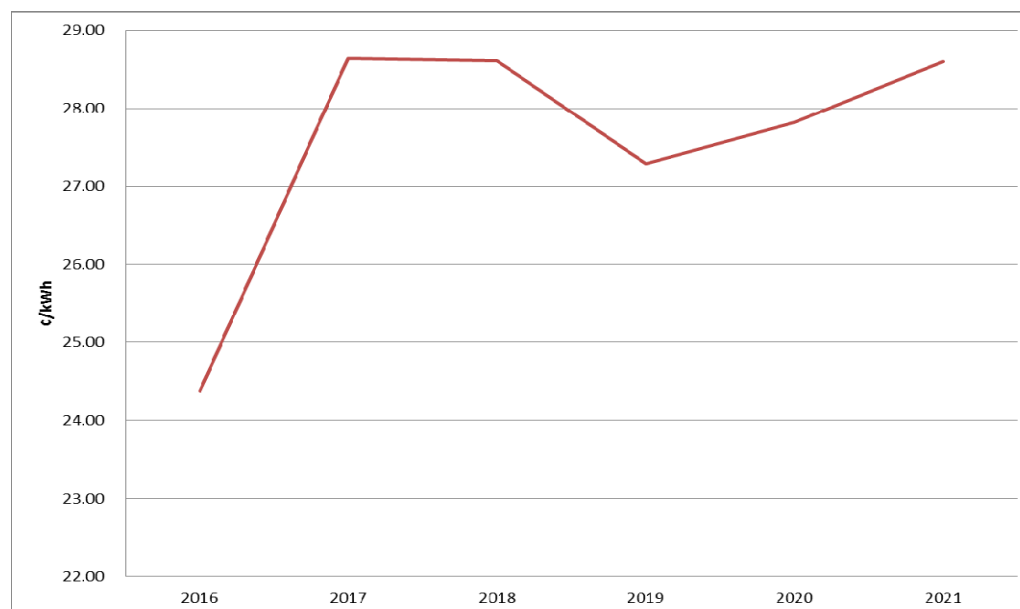
- This is only an energy rate for QFs of 100 kW or less.
- Only include sources of generation or purchased power avoided by virtue of purchasing power from a QF
- Use the same historical period used when calculating your Cost of Power Adjustment (if applicable).
- If possible, use the most current fuel price.
- Include Variable O&M (if applicable)

Projecting Avoided Energy (5-yr)

	Proj. Price Change	Projected Price of Diesel (\$/gal)	Avg. Generation Efficiency (kWh/gal)	Energy Cost (¢/kWh)	Variable O&M (¢/kWh)	Projected Avoided Energy Cost (¢/kWh)
	(A)	(B)	(C)	(D)	(E)	(F)
		$B(\text{prev}) \times (1 + A)$		$(B / C) \times 100$		$D + E$
2016	N/A	\$ 3.17	13.11	24.18	0.20	24.38
2017	+17.6%	\$ 3.73	13.11	28.45	0.20	28.65
2018	-0.1%	\$ 3.72	13.11	28.41	0.20	28.61
2019	+2.0%	\$ 3.80	14.02	27.09	0.20	27.29
2020	+2.0%	\$ 3.87	14.02	27.62	0.20	27.82
2021	+2.8%	\$ 3.98	14.02	28.40	0.20	28.60

- (A) Based on EIA projections for crude oil spot market prices (Brent & WTI).
- (B) Projected by multiplying the current price by the annual projected price change.
- (C) Calculated for your generation based upon historically realized efficiency.
- (D) The raw cost of energy based upon fuel consumption.
- (E) Projected based upon costs (besides fuel) that varies proportionally to the amount of power produced by the utility.
- (F) The projected avoided energy cost is the sum of the fuel cost and variable O&M.

Projecting Avoided Energy (5-yr)



- Projections are typically calculated at generation, not at distribution level (therefore line loss and station service are not included).
- Include only the generation or firm purchases avoided by virtue of purchasing power from a QF.
- These are only projections and NOT a standard-offer rate. A case-specific calculation will consider the costs and benefits of integration.

Projecting Avoided Capacity (10-yr)

Year	Capacity Additions			Capacity Retirements			Purchases		
	Facility	Type	MW	Facility	Type	MW	Facility	Type	MW
2016			0.0			0.0			
2017			0.0			0.0			
2018	Main Plant	Diesel	1.0			0.0			
2019			0.0	Main Plant	Diesel	0.8			
2020			0.0			0.0			
2021			0.0			0.0	GenCo	Cogen - Nat Gas	2.0
2022			0.0			0.0	GenCo	Cogen - Nat Gas	2.0
2023	Wet Lake	Hydroelectric	5.0			0.0	GenCo	Cogen - Nat Gas	2.0
2024			0.0	Main Plant	Diesel	3.0	GenCo	Cogen - Nat Gas	2.0
2025			0.0			0.0	GenCo	Cogen - Nat Gas	2.0
2026			0.0			0.0	GenCo	Cogen - Nat Gas	2.0

Year(s)	Facility	Type	Fuel	MW	Life (yrs)	Estimated Construction Costs	Capacity (\$/kW)	Energy (¢/kWh)
2018	Main Plant	Addition	Diesel	1.0	30	\$ 3,000,000	\$ 3,000	21.13
2021-2026	GenCo	Firm Purchase	Nat. Gas	2.0	25	N/A	N/A	18.00
2023	Wet Lake	Addition	Hydro	5.0	80	\$ 50,000,000	\$ 10,000	0.00

These are only projections and **NOT** a standard-offer rate. A case-specific calculation will consider the costs and benefits of integration.

Calculating Avoided Cost

- Interconnection costs are considered separately
- The calculation of Avoided Cost should consider:
 - The projections separately calculated
 - The availability of capacity or energy from a QF during the system daily and seasonal peaks
 - The relationship between the availability of energy or capacity from the QF to the ability of the electric utility to avoid costs, including the deferral of capacity additions
 - Integration costs and benefits can be calculated as part of the avoided costs or considered separately, but assigned/awarded as appropriate.

Any Questions?

James Keen

Regulatory Consultant

AKT LLP

(907) 522-2129

jkeen@aktcpa.com

