Award Winning

Demand **S**ide **M**anagement **O**ption/**R**isk **E**valuator

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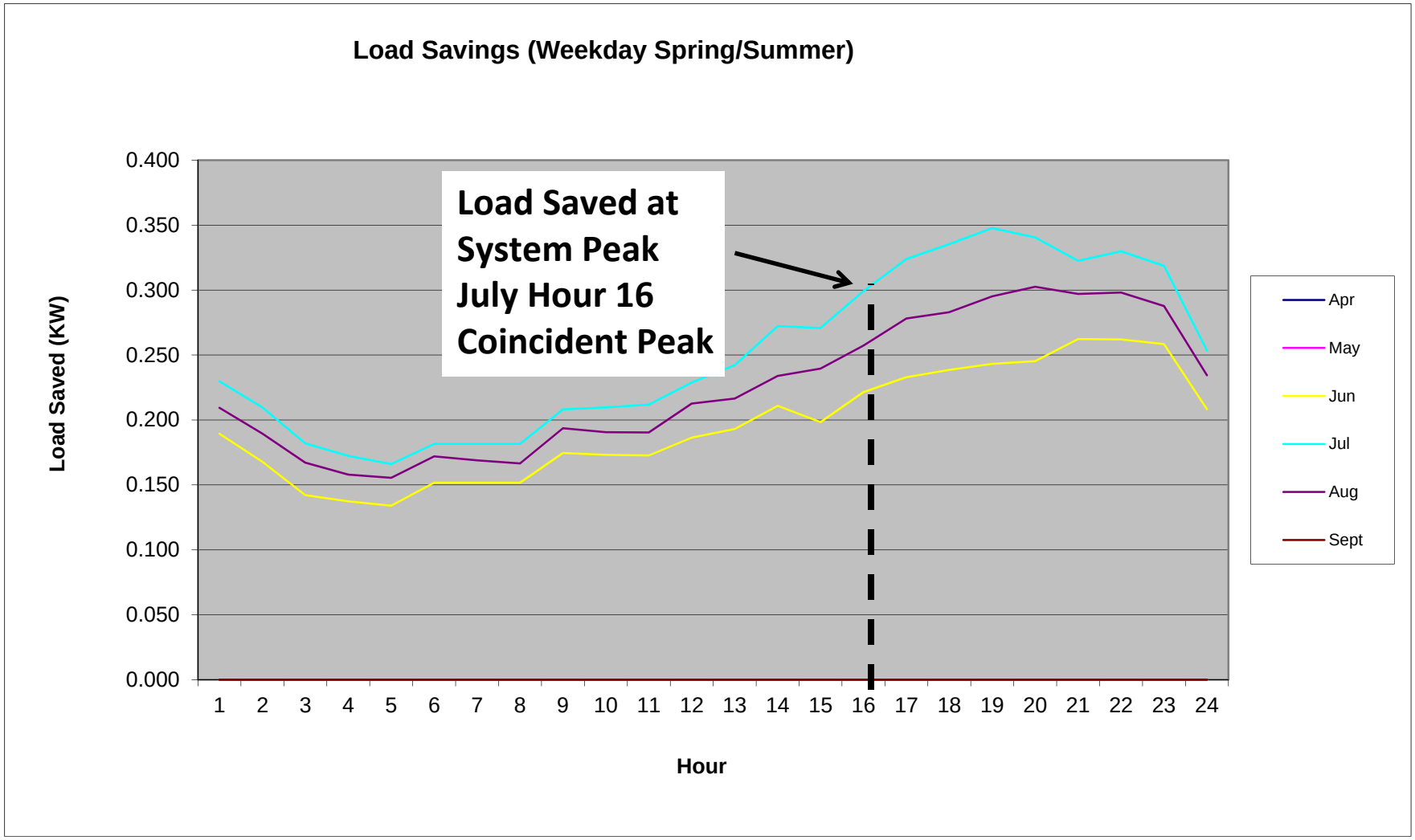
Coincident System Peak

Demand Saving is based on capacity reduction at the time of **SYSTEM** Peak capacity.

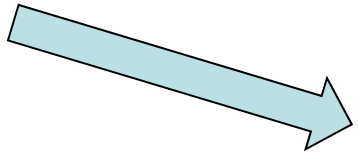
1 (Summer)	2 (Winter)	
$65.00	$0.00	Avoided Capacity ($ / kW Annualized)
7	1	Coincident Month (1-12, 0)
16	9	Coincident Hour (1-24, 0)

Customer Loadshape



Enter Savings Loadshape

Mode 2: Specify savings loadshape
Including savings at the time of system peak

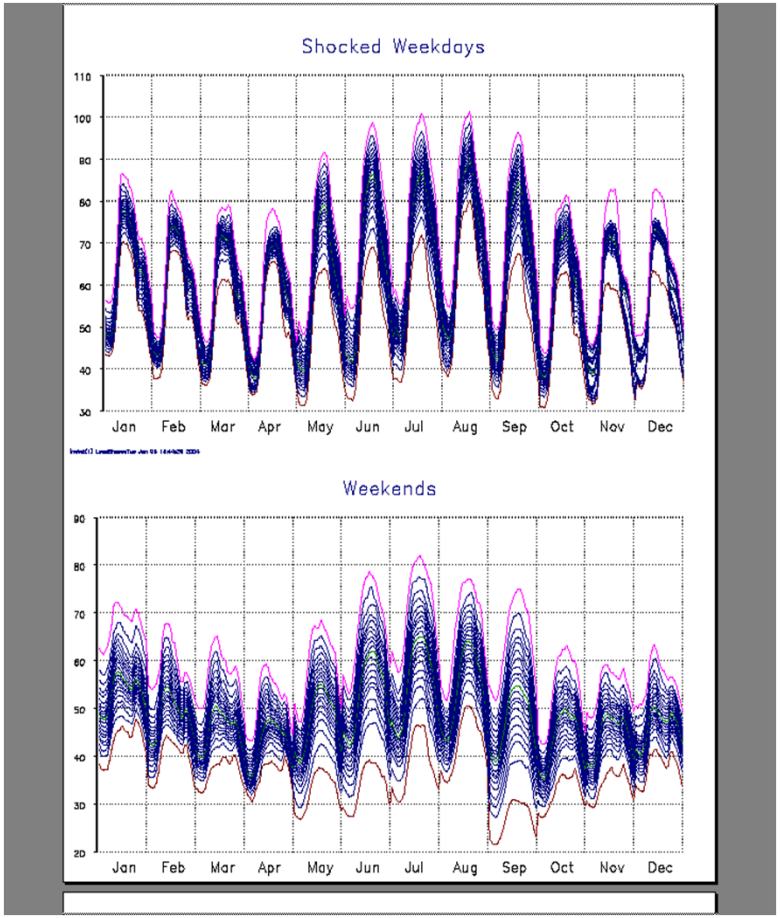


		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mean Savings	*Apr*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Spring	*May*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Summer	*Jun*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
	Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
	Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
	Sept	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Mean Savings	*Oct*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Fall	*Nov*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Winter	*Dec*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
	Jan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
	Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
	Mar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035

Example Loadshape Output

For each customer load or end use, 576 regressions are selected among several thousand possible combinations.

- **12 months x 24 hours x 2 day types.**
- **Each hour has its own distribution.**
- **Distributions are key to valuing extreme events, as with demand response.**
- **The middle "load shape" is the weather normal prediction of load or savings, and the upper load shape is the 99th percentile load forecast.**
- **5th percentile increments are provided.**



Enter Coincident Savings

Using Mode 3 and the loadshape you can still specify the Coincident kW if known

Mode 3 - Targets	1000	kWh	
	1	Non-Coin kW	
	0	CCF	
	1.25	Summer Coincident kW	
	1	Winter Coincident kW	

Results in Capacity Savings

	Cumulative							
Year	kW	kW (net)	Summer Coin kW	Summer Coin (net)	Winter Coin kW	Winter Coin (net)	kWh	kWh (net)
1	268	268	230	230	0	0	275,000	275,000
2	535	535	461	461	0	0	550,000	550,000
3	803	803	691	691	0	0	825,000	825,000
4	1,071	1,071	921	921	0	0	1,100,000	1,100,000
5	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
6	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
7	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
8	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
9	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
10	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
11	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
12	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
13	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
14	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
15	1,338	1,338	1,152	1,152	0	0	1,375,000	1,375,000
16	1,071	1,071	921	921	0	0	1,100,000	1,100,000
17	803	803	691	691	0	0	825,000	825,000
18	535	535	461	461	0	0	550,000	550,000
19	268	268	230	230	0	0	275,000	275,000

Based on Capacity Value

Cost-Based Avoided Costs (Net Free Riders/Persistence)

	Cumulative Electric				
Year	Energy	Capacity	T&D	Ancillary	Total
1	$18,647.46	$14,971.00	$5,758.08	$1,007.77	$40,384.30
2	$37,667.87	$30,241.42	$11,631.31	$2,035.69	$81,576.29
3	$57,066.82	$45,815.75	$17,621.44	$3,084.07	$123,588.08
4	$76,849.99	$61,698.54	$23,730.21	$4,153.21	$166,431.95
5	$97,023.11	$77,894.41	$29,959.39	$5,243.43	$210,120.33
6	$97,993.34	$78,673.35	$30,258.98	$5,295.86	$212,221.54
7	$98,973.28	$79,460.08	$30,561.57	$5,348.82	$214,343.75
8	$99,963.01	$80,254.68	$30,867.19	$5,402.31	$216,487.19
9	$100,962.64	$81,057.23	$31,175.86	$5,456.33	$218,652.06
10	$101,972.27	$81,867.80	$31,487.62	$5,510.89	$220,838.58
11	$102,991.99	$82,686.48	$31,802.49	$5,566.00	$223,046.97
12	$104,021.91	$83,513.35	$32,120.52	$5,621.66	$225,277.44
13	$105,062.13	$84,348.48	$32,441.72	$5,677.88	$227,530.21
14	$106,112.75	$85,191.97	$32,766.14	$5,734.66	$229,805.51
15	$107,173.88	$86,043.88	$33,093.80	$5,792.01	$232,103.57
16	$86,596.49	$69,523.46	$26,739.79	$4,679.94	$187,539.68
17	$65,596.84	$52,664.02	$20,255.39	$3,545.06	$142,061.31
18	$44,168.54	$35,460.44	$13,638.63	$2,387.00	$95,654.62
19	$22,305.11	$17,907.52	$6,887.51	$1,205.44	$48,305.58
Totals	$1,531,149.43	$1,229,273.87	$472,797.64	$82,748.02	$3,315,968.96

Savings Output Options

- Cumulative 8760 kWh Savings by Year w/Losses (50% Percentile)
- Cumulative Peak-Day Savings (95%)
- Typical Weekday (50%)
- Typical Weekend (50%)

Contact Information

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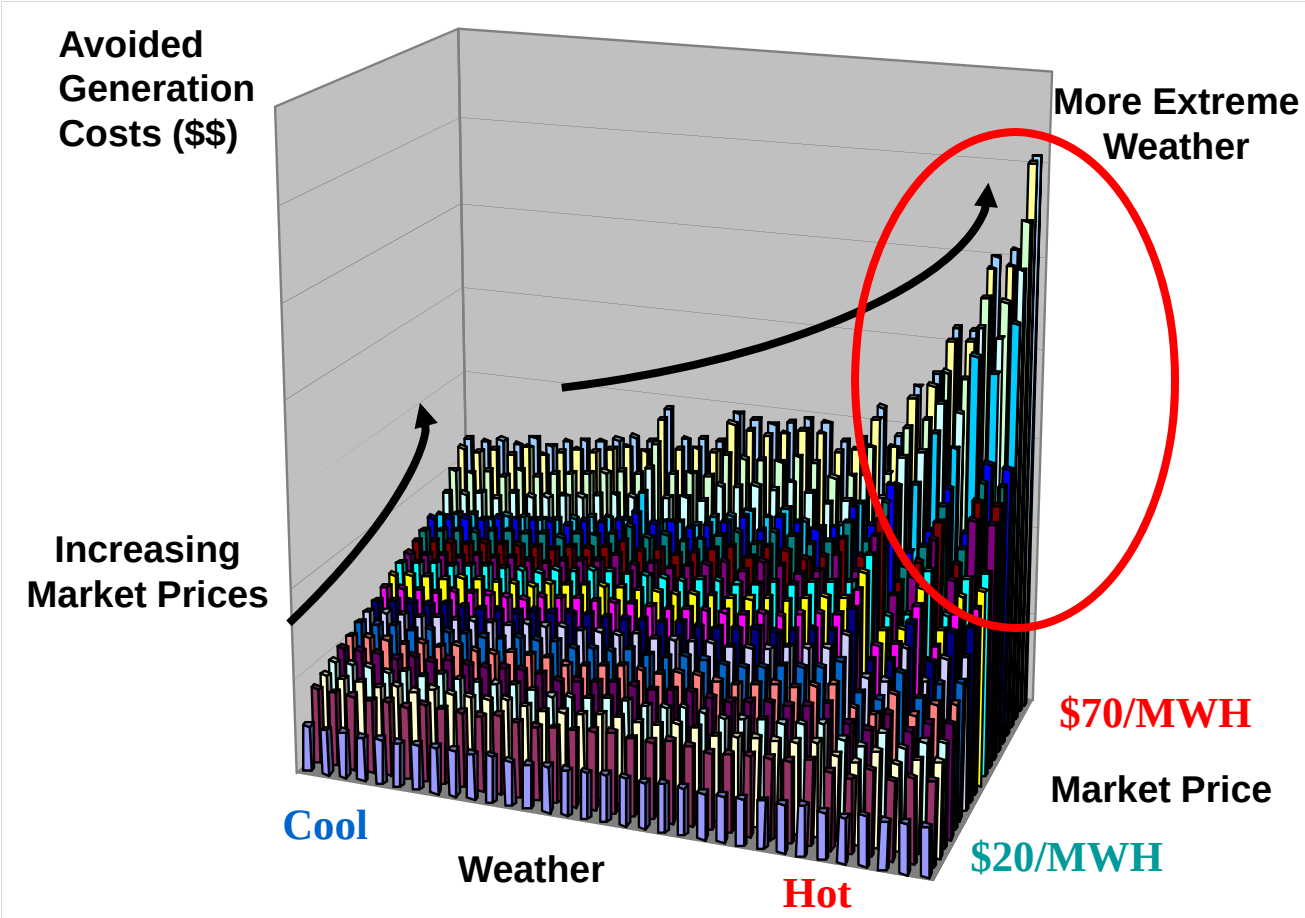
Distribution of Test Results

Loads **and** prices are **both** driven by weather covariance. If we use averages we loose the high end values.



Avoided Costs

Cost Based View

More prevalent in traditional regulation, states
May undervalue prices (innovation) long term

Market Based View

More common with FERC, dereg markets
May overvalue prices (contracts) in short term

APPLIED METHODS DIFFER

DSMore values programs using **BOTH** cost-based and market-based valuations, to show range of value.

Retrospective, Historical	Prospective, Futures/ Forwards
Utility/ Construction Information	Marketer, Trader Information
Embedded Costs	Forward Markets
System Lambda	Market Indices, MW Daily, ICE, ISO
Proxy for Capacity (peaker)	Structured Deals, Bundled (Risk) Contracts
Energy/ capacity fixed to one utility	Fixed to a region, hub or ISO zone.
Tied to one plant (or one utility's plants)	Reflects blend of capacity in a region
Engineering, Production Models	Statistical, Financial Models
Dispatch Analysis, Stack Models	Black-Scholes Models, GARCH

Test Distributions and Risk

Test results are driven (significantly) by market prices and weather

Min Value	**Lowest market prices, mildest weather**
Max Value	**Highest market prices, extreme weather**
Today's Value	**Today's market prices**
Alternative Value	**Alternative choice for Today's prices**
Option Value	**Long Run Value over many market prices, all weather**

Tests	Minimum Value	Today's Value	Alternate Value	Option Value	Maximum Value
Utility Test	1.17	2.53	2.74	3.25	8.36
TRC Test	1.49	3.23	3.51	4.15	10.68
RIM Test	0.52	1.36	1.47	1.74	4.52
RIM (Net Fuel)	0.63	1.73	1.87	2.21	5.91
Societal Test	1.77	3.51	3.78	4.43	23.51
Participant Test	2.15	2.24	2.24	2.24	3.03