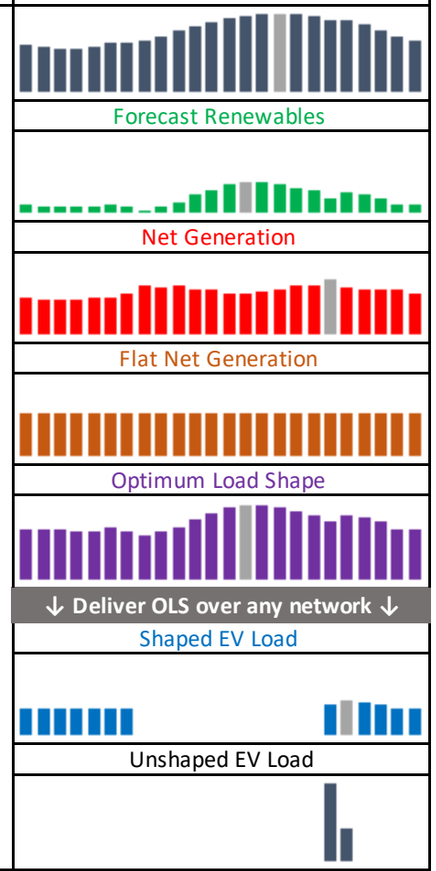
	Supply-side: Two forecasts [GWh] feed Optimum Load Shape (OLS) Producer								Demand-side: OLS Consumers modulate load			Forecast Load	Electricity Price and Cost		
	Forecast Load	-	Forecast Renewables	=	Net Generation	→	Flat Net Generation	→	Optimum Load Shape	→	EV Optimum Load Shape	→	Shaped EV Load	→ Unshaped EV Load		Retail ¢/kWh	Shaped ¢/h	Unshaped ¢/h
Midnight	36.1		6.0		30.1		35.2		3.7%		7.3%		0.73	-		15.1	11.1	0.0
1	34.6		5.8		28.8		35.2		3.6%		7.3%		0.73	-		14.4	10.5	0.0
2	33.7		5.4		28.3		35.2		3.6%		7.2%		0.72	-		14.2	10.2	0.0
3	33.4		4.6		28.8		35.2		3.5%		7.1%		0.71	-		14.4	10.2	0.0
4	34.7		4.3		30.4		35.2		3.5%		7.0%		0.70	-		15.2	10.7	0.0
5	37.5		6.7		30.8		35.2		3.7%		7.5%		0.75	-		15.4	11.5	0.0
6	38.2		4.6		33.6		35.2		3.5%		7.1%		0.71	-		16.8	11.9	0.0
7	40.0		0.4		39.6		35.2		3.2%							19.8	0.0	0.0
8	43.2		4.5		38.7		35.2		3.5%							19.4	0.0	0.0
9	47.0		7.8		39.2		35.2		3.8%							19.6	0.0	0.0
10	50.7		14.2		36.5		35.2		4.4%							18.2	0.0	0.0
11	53.8		18.0		35.8		35.2		4.7%							17.9	0.0	0.0
Noon	56.5		23.6		32.9		35.2		5.2%							16.5	0.0	0.0
13	58.4		25.0		33.4		35.2		5.3%							16.7	0.0	0.0
14	59.7		24.7		35.0		35.2		5.3%							17.5	0.0	0.0
15	60.2		23.5		36.7		35.2		5.2%							18.4	0.0	0.0
16	59.7		20.0		39.7		35.2		4.9%							19.9	0.0	0.0
17	58.0		17.8		40.3		35.2		4.7%							20.1	0.0	0.0
18	55.9		11.6		44.4		35.2		4.1%		8.3%		0.83	7.00		22.2	18.5	155.3
19	55.0		16.7		38.3		35.2		4.6%		9.2%		0.92	3.00		19.1	17.7	57.4
20	52.3		14.8		37.4		35.2		4.4%		8.9%		0.89	-		18.7	16.7	0.0
21	47.5		11.5		36.1		35.2		4.1%		8.3%		0.83	-		18.0	15.0	0.0
22	43.0		6.2		36.7		35.2		3.7%		7.4%		0.74	-		18.4	13.5	0.0
23	39.5		6.0		33.6		35.2		3.6%		7.3%		0.73	-		16.8	12.3	0.0
Totals →	1,128.7		283.6		845.1		845.1		100%		100%		10.00	10.00		Cost →	$ 1.70	$ 2.13
	GWh		GWh		GWh		GWh		Unitless		Unitless		kWh	kWh		Savings →	$ 0.43	$ 157.03
																20%	per/day	per/year

network any over Shape Load Optimum Deliver

The vehicle is in use and unavailable for charging from 0700 - 1800 hours.

The charger takes unavailability into consideration and autonomously adjusts the Optimum Load Shape that it received from the supply-side.



Assumptions & notes:

1. Data are illustrative of load for the serving area of the Electric Reliability Council of Texas, and represent ~10% of U.S. nationwide electricity usage on a hot peak summer day.
2. Model can be similarly applied to any vertically integrated serving area, e.g., for micro and nanogrids. Modeling wholesale markets and on-site combined heat & power (CHP) is TBD.
3. In power systems, generation = load. In optimization, loads from electric vehicles (EVs), facility batteries, and smart devices are modulated , i.e., shifted forward & backward in time.
4. The OLS is normalized between zero and one by dividing the generation at each time step by the sum of generation over the simulation horizon, in this case 1-day.
5. The unshaped EV Level 2 charger draws 7 kW for 1.43 hours = ~10 kWh of energy for ~100 miles of travel. No opt-in or two-way communications is required; OLS can be broadcast.