

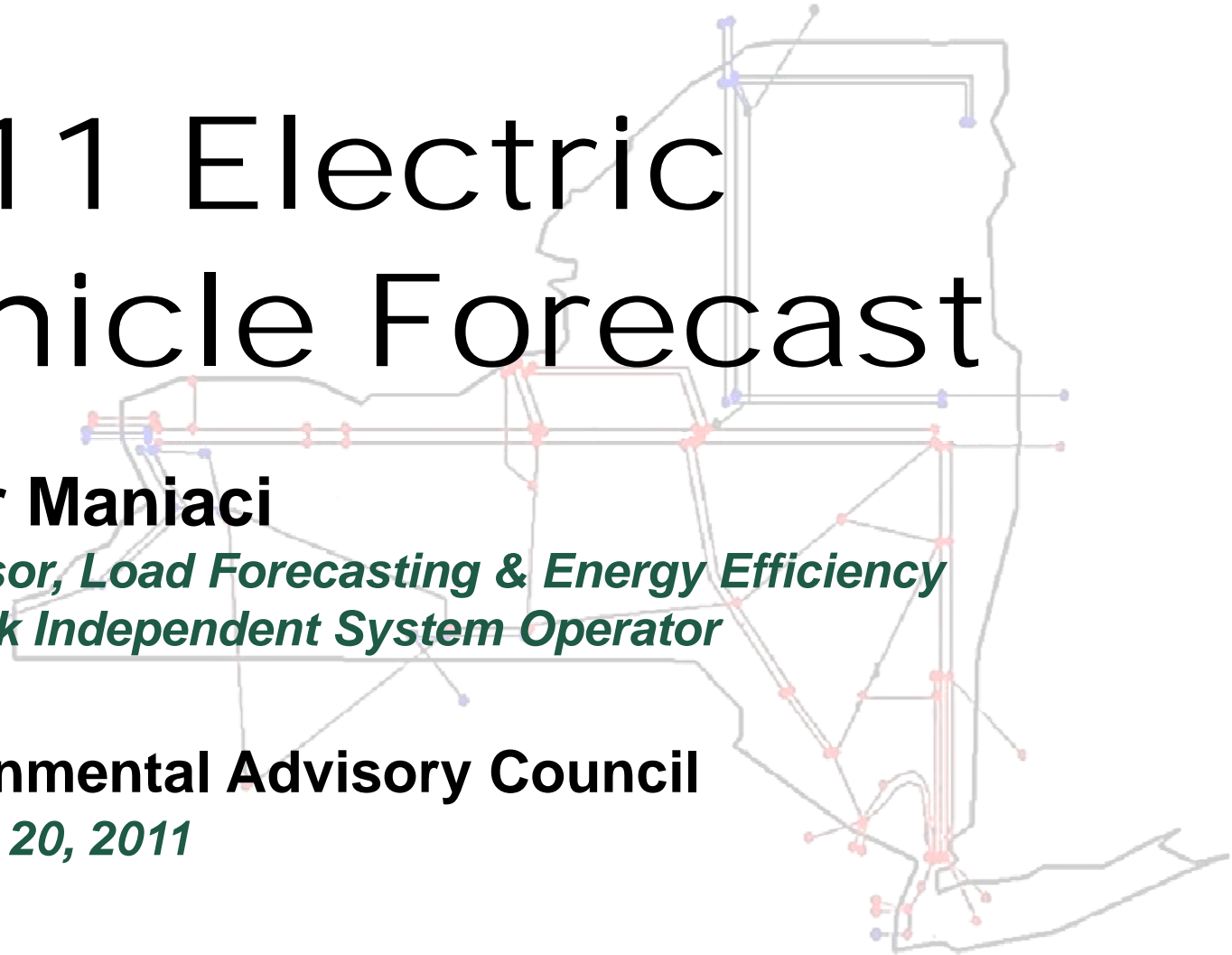
# 2011 Electric Vehicle Forecast

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# Summary

- ◆ **Con Ed & LIPA included EV forecasts as part of their 2011 long-term forecasts**
- ◆ **The NYISO developed a separate forecast for the rest of the state**
- ◆ **Statewide results by 2021:**
  - ***360,000 PHEVs statewide***
    - *This represents only private passenger vehicles*
    - *Commercial fleet is only 10% of all vehicles*
  - ***4% of all passenger cars forecast to be PHEVs***
  - ***700 GWh annual usage --180 MW summer peak***
- ◆ **Overview of method**
  - ***Cars per Capita \* Population \* Market Share of EVs***
  - ***Annual & Summer Peak Usage per Car***

# PHEV Usage Parameters

## Used for Upstate Zones

PHEV Fuel Economy & Mileage		
	Lower Bound	Upper Bound
watt-hrs/mile	260	300
miles/yr	12,000	14,000
100% Elec. Operation	3.12	4.20
Electric Usage Share.	67%	75%
Electric Usage - MWh	2.09	3.15
Grid Losses (%)	7.5%	7.5%
Generation Req'd	2.26	3.41

PHEV Charging Requirements		
	120 Volts	240 Volts
Amps	15	15
Volts	120	240
Peak	1.800	3.600
Grid Losses	7.5%	7.5%
Max kW	1.946	3.892
kWh/yr	3000	3000
Hours/yr	1667	833
Days/yr	312	312
Hours/Day	5.342	2.671

Usage Requirement - MWh/Year 3.00

Chevy Volt Example			
miles per charge	25	40	50
kWh "Tank"	10.4	10.4	10.4
Watt-hr/mile	416	260	208

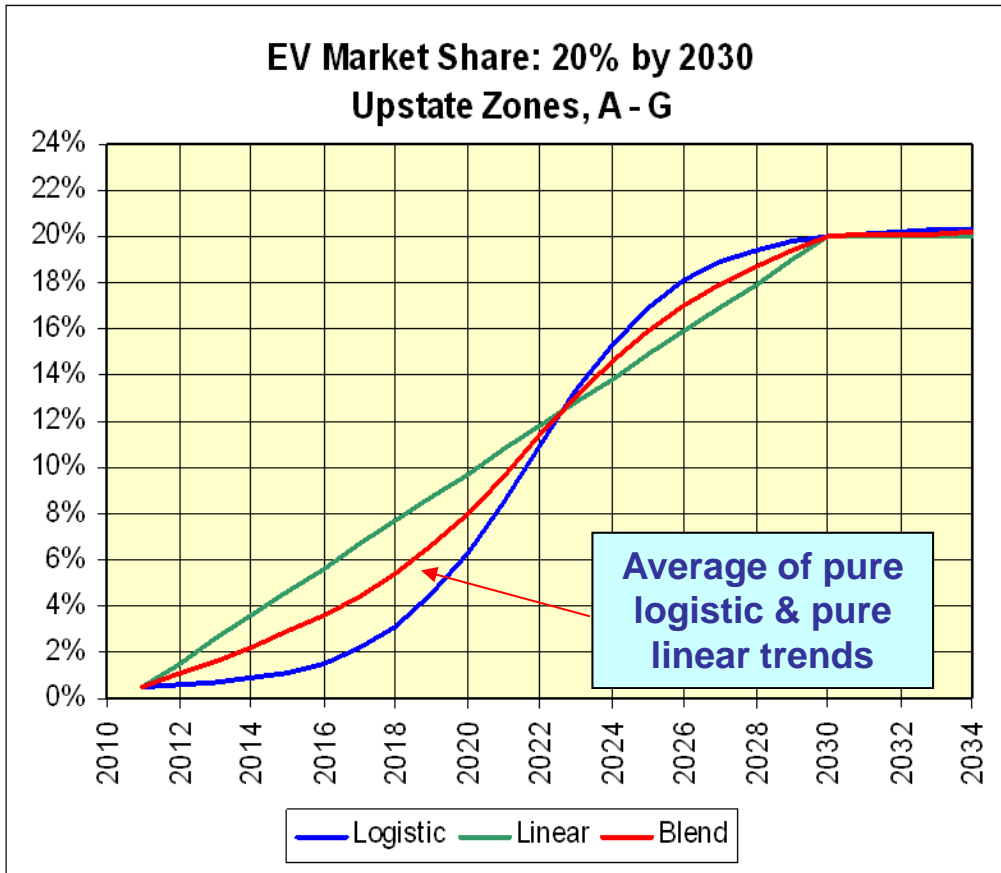
"...it works like a champ. Actually, it's extraordinarily efficient. Consider that the operable range of charge in the battery is 65%, or 10.4 kWh. At 40 miles all-electric, that's 260 watt-hours per mile, or about the power necessary to run a hand-held hair-dryer for 15 minutes. We're talking about an object that, with passengers, weighs two tons."

<http://www.plugandgonow.com/wp-content/uploads/2010/10/2010-Chevrolet-Volt-Wall-Street-Journal.doc>

Additional Fuel Economy References:  
EPRI-NRDC Environmental Assessment

# PHEV Market Penetration

## *PHEV Annual Percent of New Cars Sold*



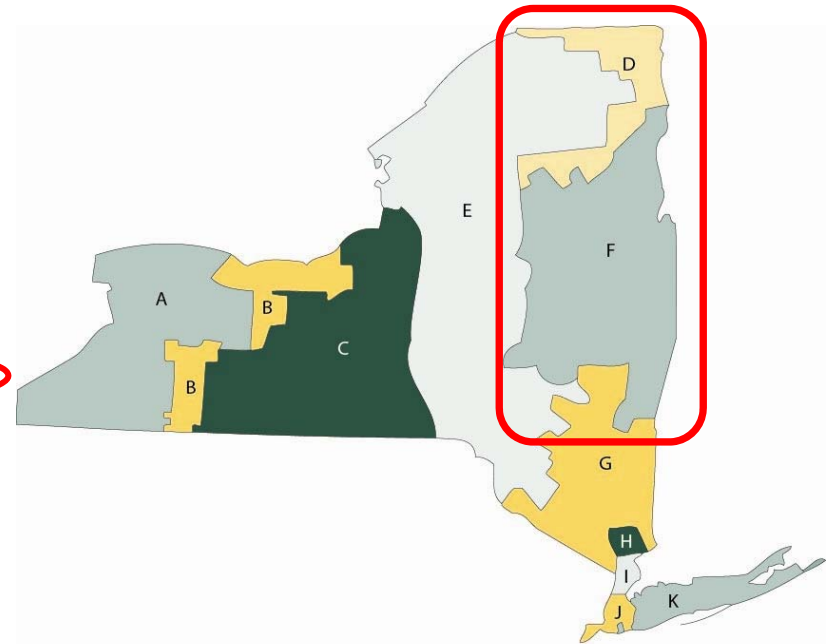
Zonal Parameters for Summer Peak						
Zone	Cars per capita	Coin. Factor	Share of 240 V Chargers	Max kW	Summer Peak kW	Annual MWh
A	0.60	12%	67%	3.25	0.39	3.00
B	0.65	12%	67%	3.25	0.39	3.00
C	0.50	12%	67%	3.25	0.39	3.00
D	0.30	12%	67%	3.25	0.39	3.00
E	0.75	12%	67%	3.25	0.39	3.00
F	0.65	12%	67%	3.25	0.39	3.00
G	0.65	12%	67%	3.25	0.39	3.00

**Cost premium for 240-volt charger is about \$500 plus \$1500 for installation. Rebates can defray the cost.**

# Example: Energy & Peak - 2015

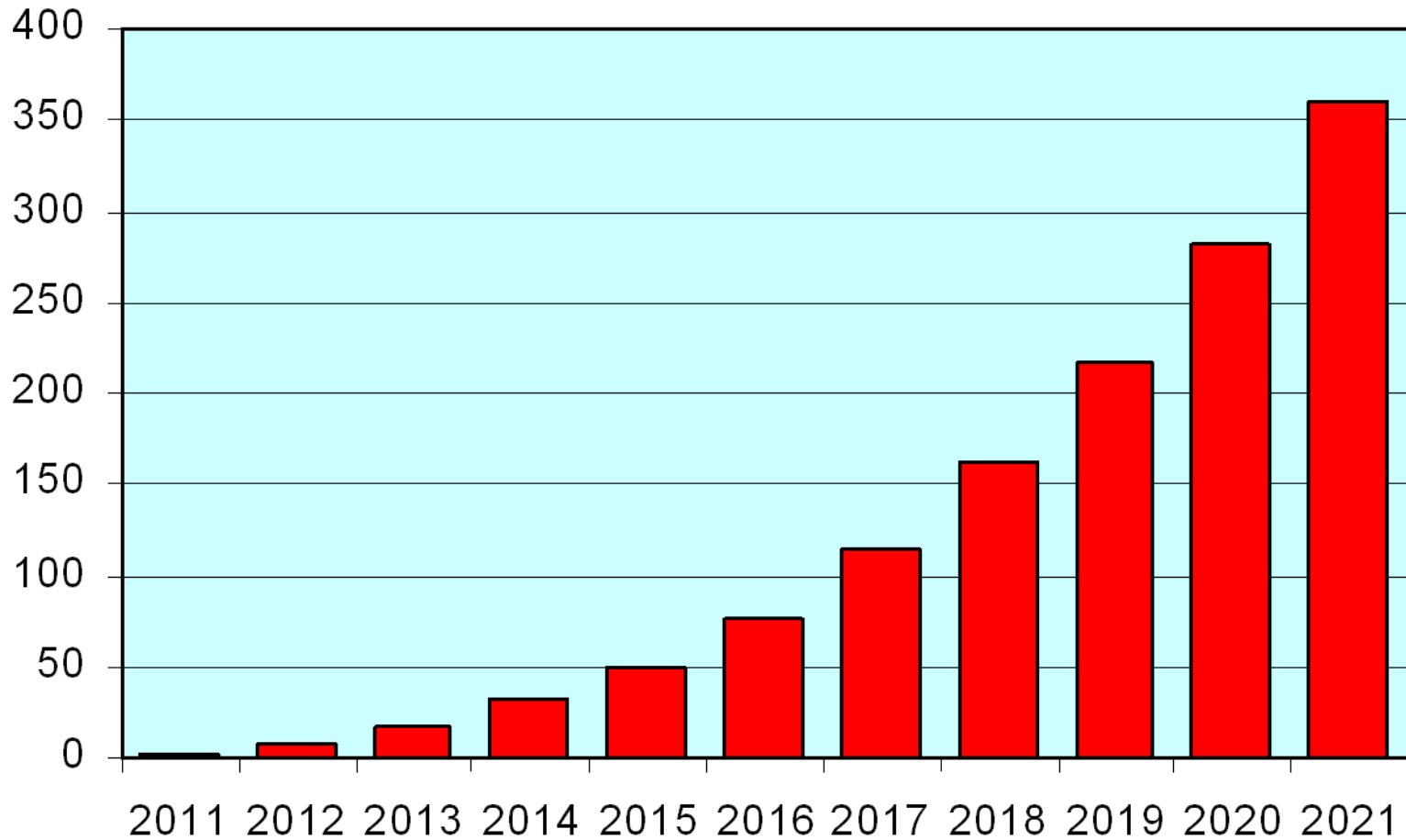
Annual Energy	Zone F	Zone D
Population	1,117,093	162,064
Cars per person	0.65	0.30
Percent new cars sold	6.50%	6.50%
Percent that are EV	2.87%	2.87%
EV's Sold	1,356	91
Usage per EV - MWh	3.00	3.00
Annual Usage - MWh	4,069	272

Summer Peak	Zone F	Zone D
120 Volt Charger kW	1.80	1.80
xShare of Chargers	33%	33%
+240 Volt Charger kW	3.60	3.60
xShare of Chargers	67%	67%
Max Demand, kW	3.01	3.01
Coincidence Factor	12%	12%
Summer Peak per EV	0.36	0.36
EV's Sold	1,356	91
Summer Peak - kW	489	33
System Losses	7.50%	7.50%
System Peak kW	529	35

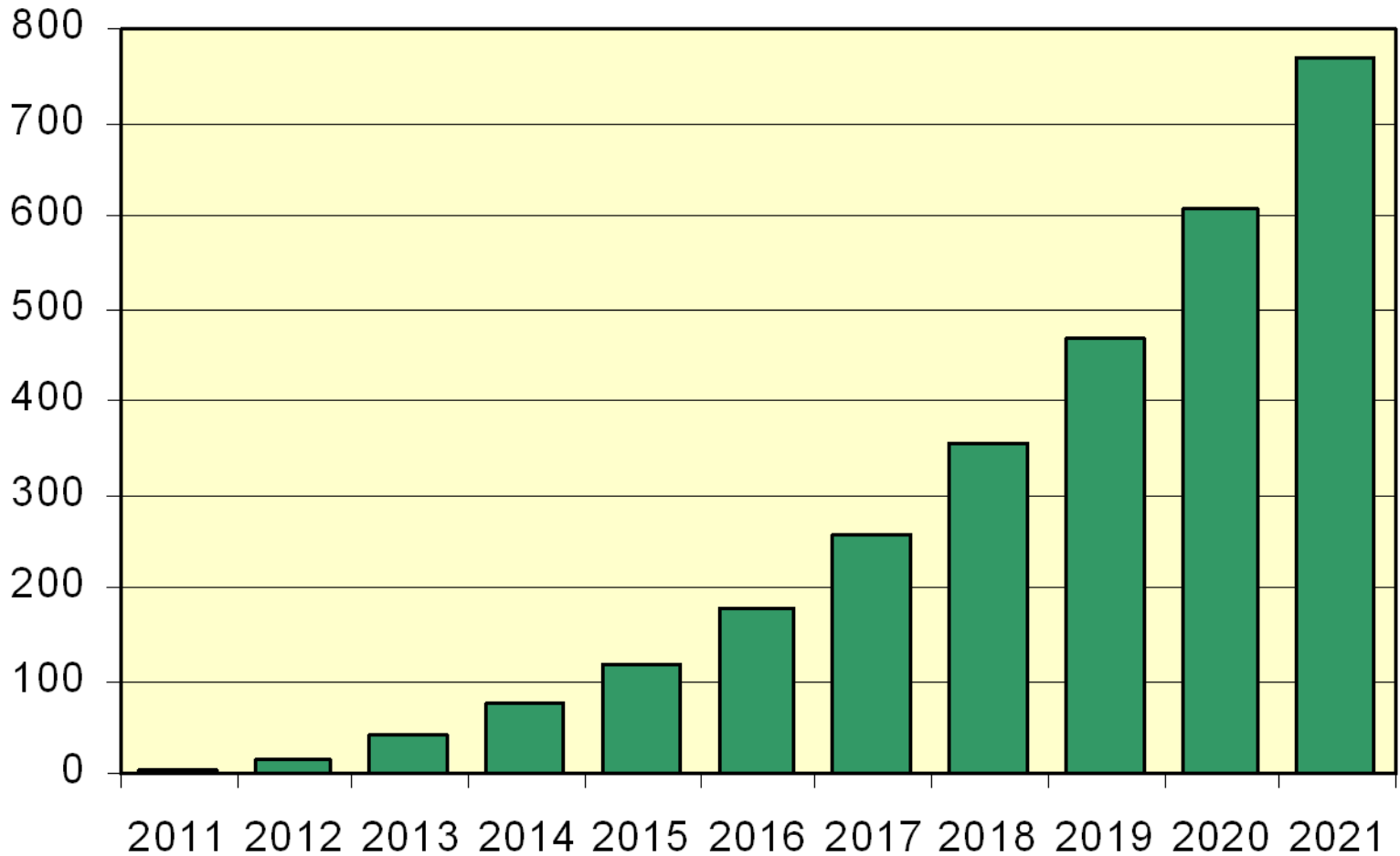


- Population forecasts from Moody's Analytics
- Cars per person from NYS DMV county data, 2007-2009

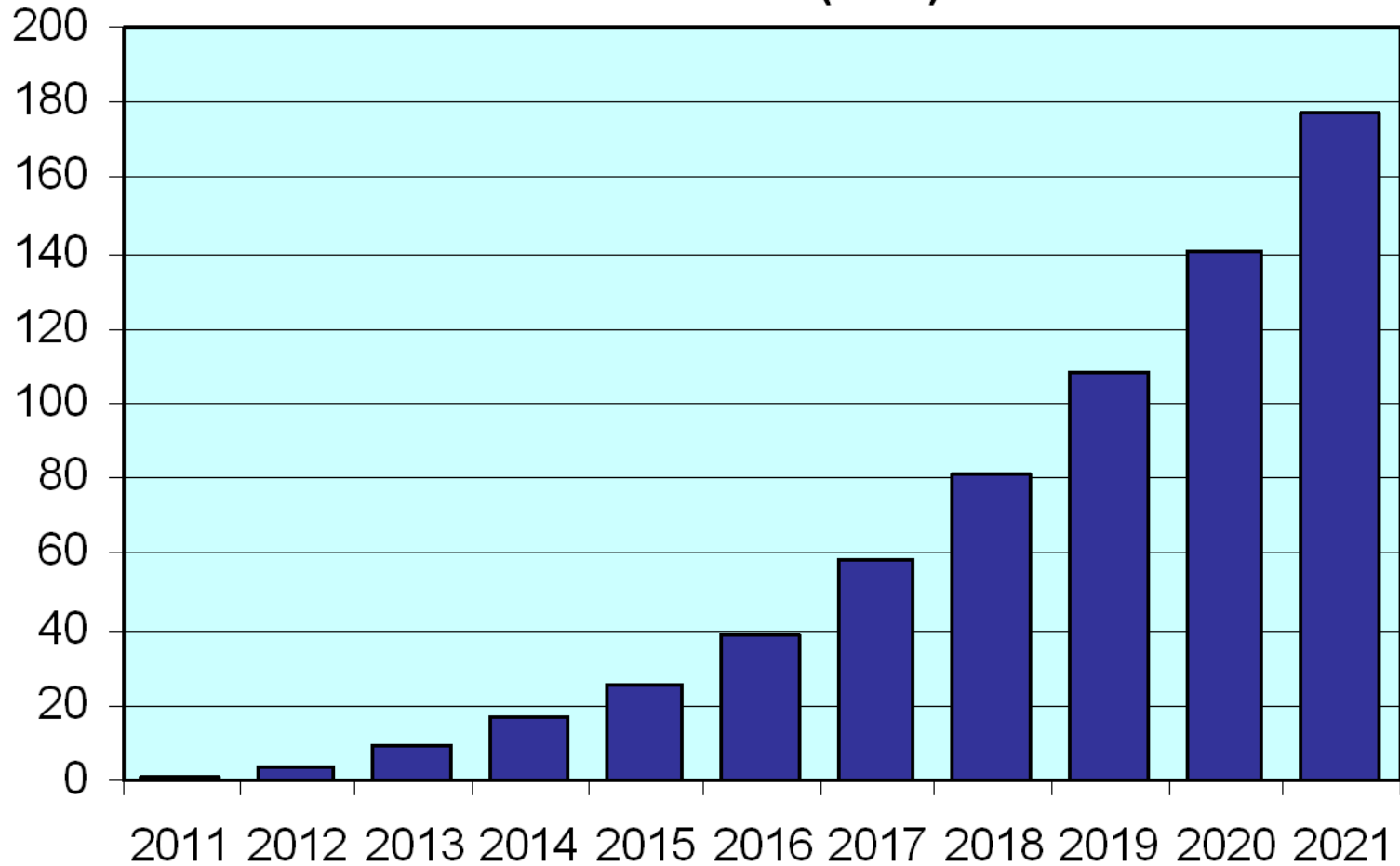
## NY State PHEV Forecast Cars on Road (000s)



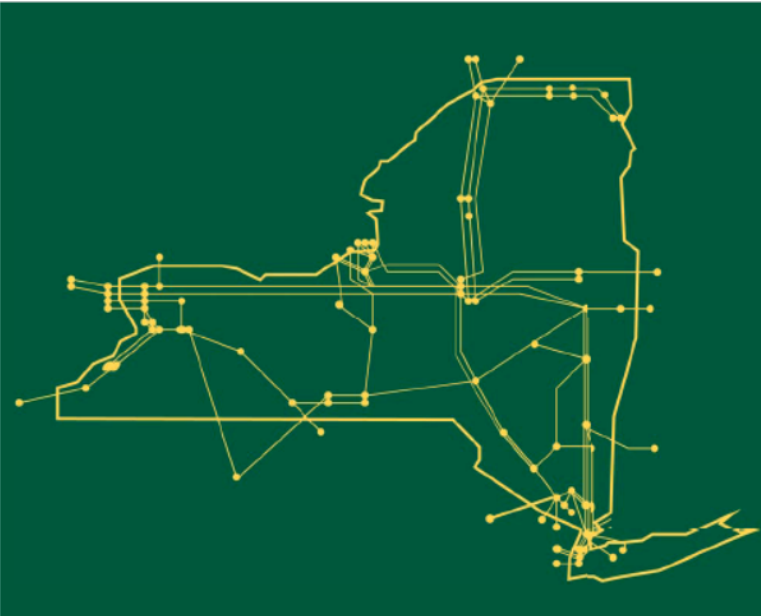
## NY State PHEV Forecast Annual Energy (GWh)



## NY State PHEV Forecast Summer Peak (MW)



The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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