

Technical Conference on Environmental Regulations and Electric Reliability, Wholesale Electricity Markets, and Energy Infrastructure

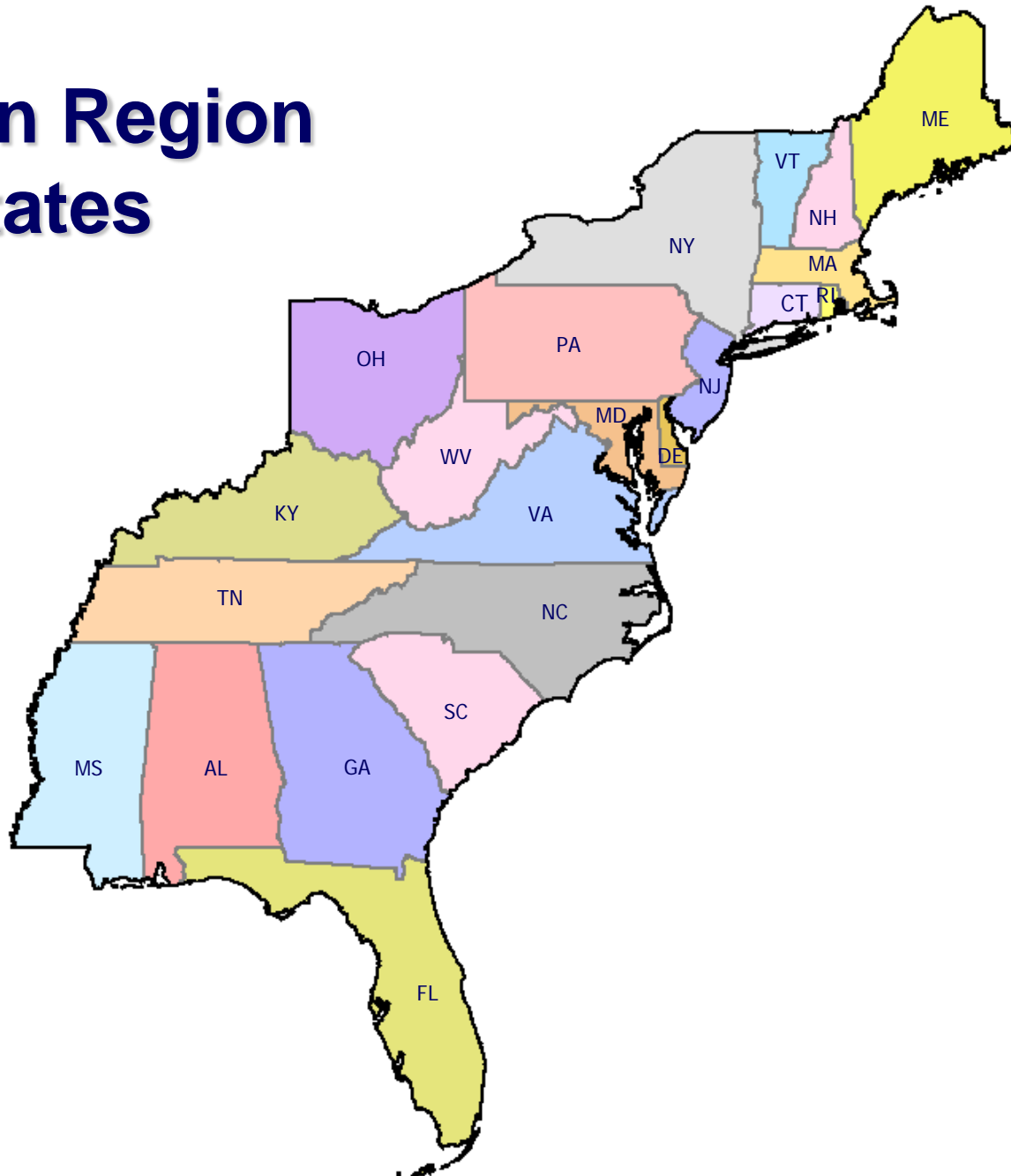
Eastern Region



March 11, 2015

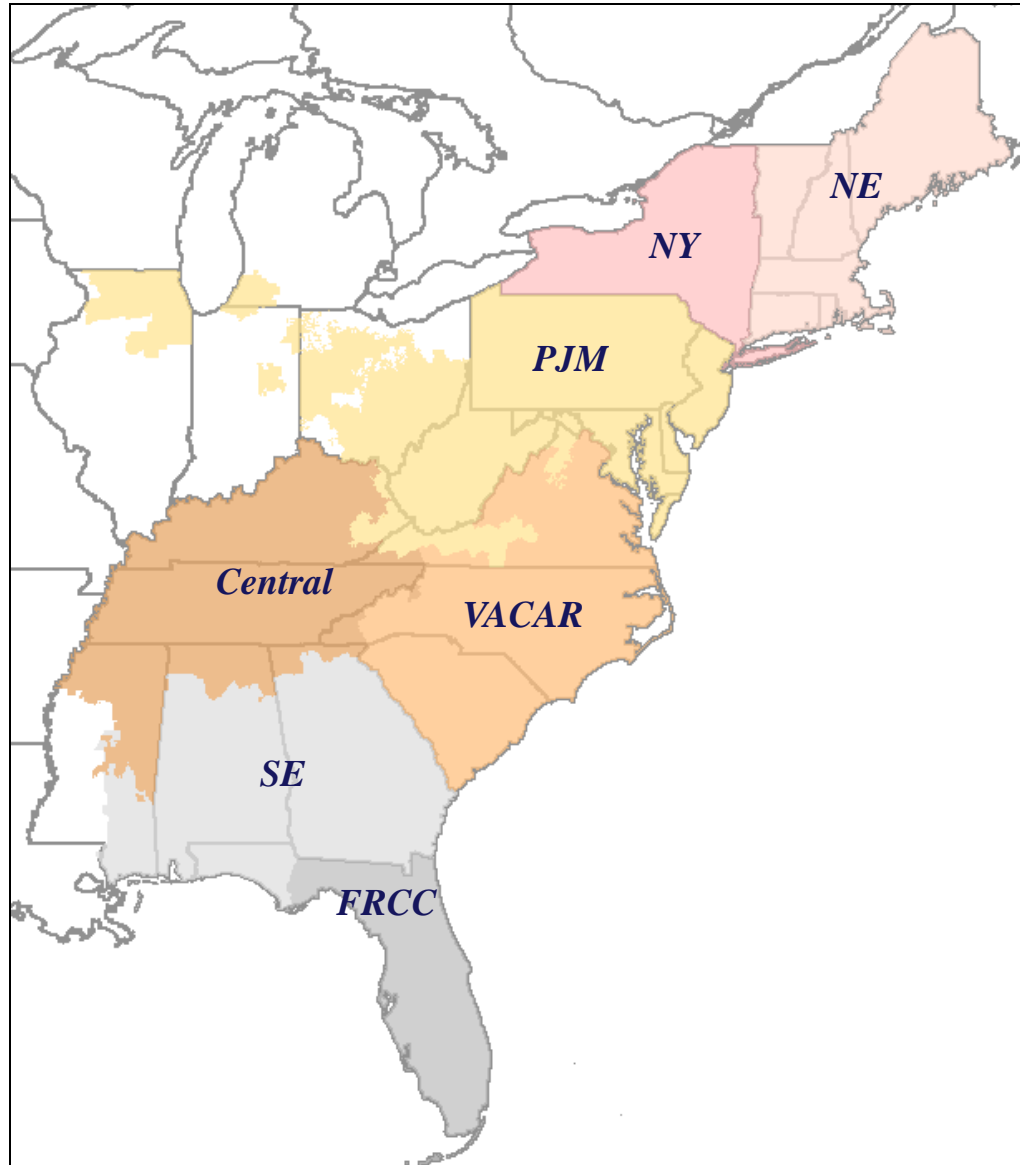
Washington, DC

Eastern Region States

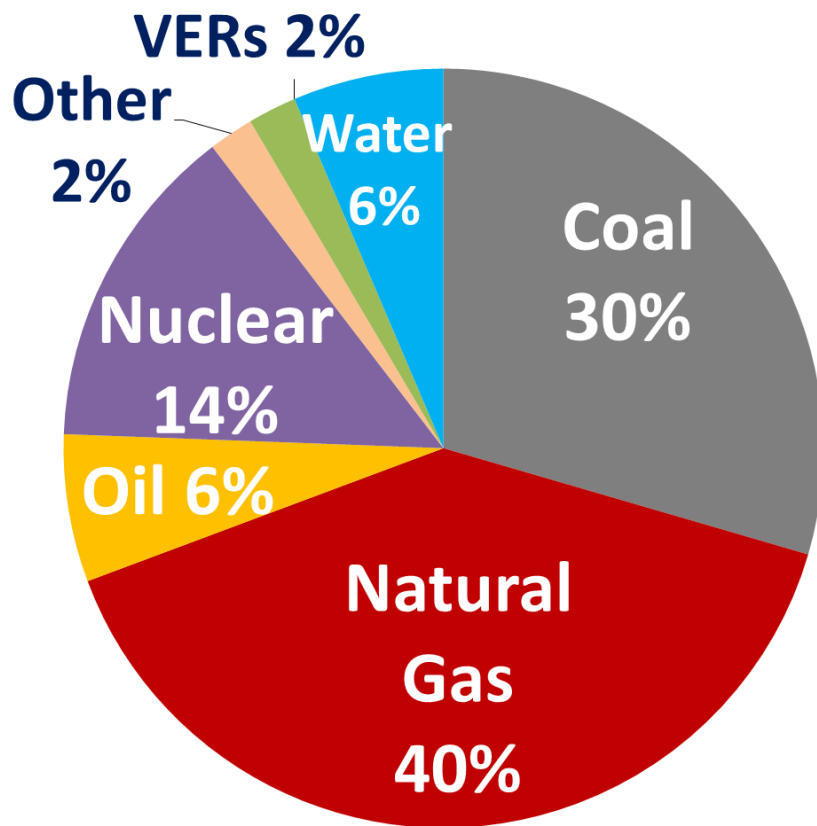


ELECTRIC INFRASTRUCTURE

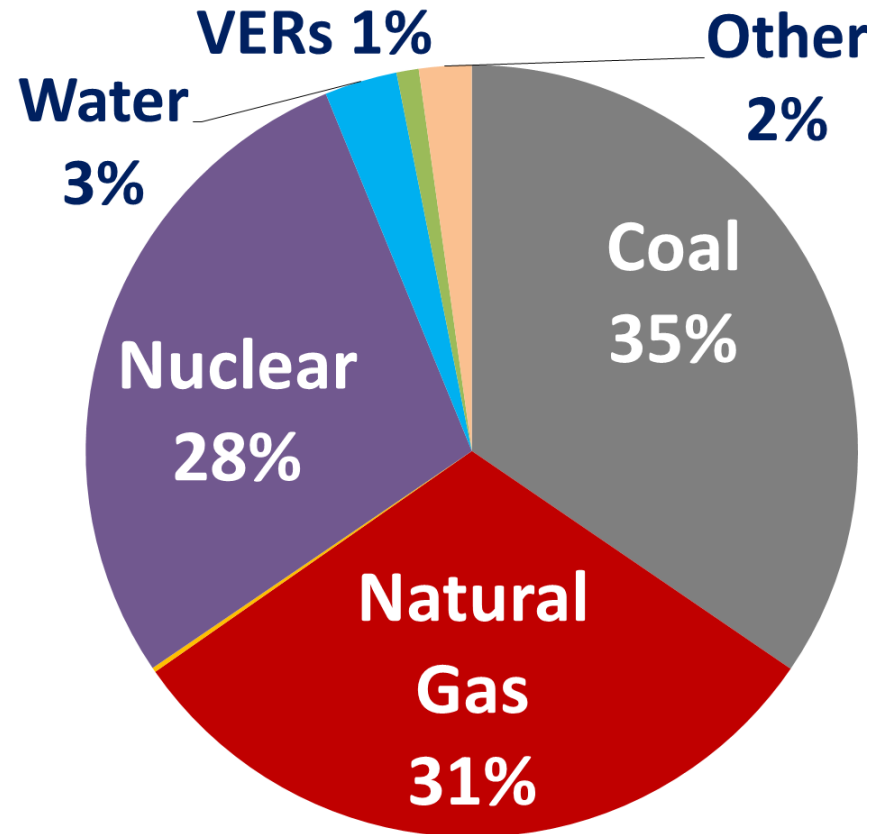
NERC Sub-Regions



Installed Capacity and Generation



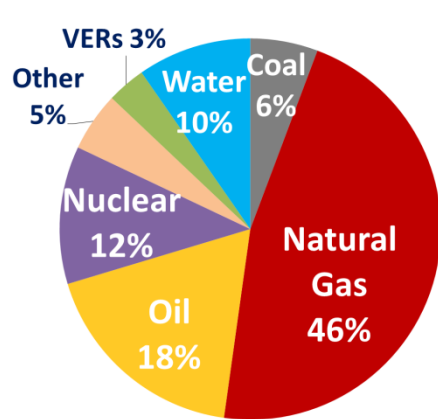
Current Installed Capacity
550,571 MW



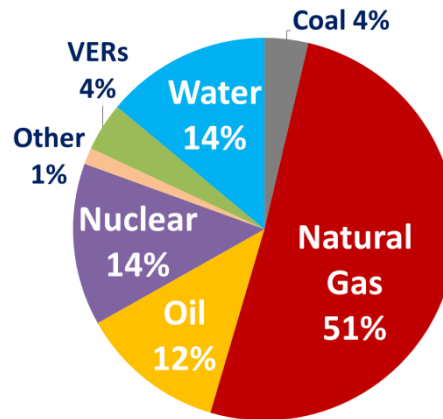
2012 Generation
1,968,705 GWh

Source: Data derived from Ventyx, Velocity Suite, February 2015.

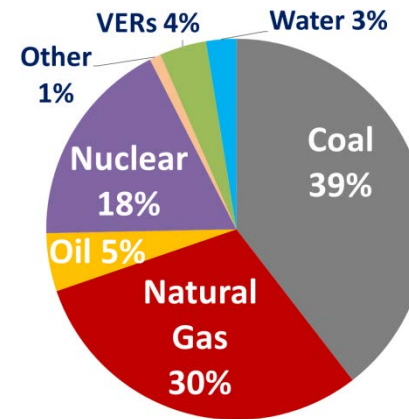
Installed Capacity by Sub-Regions



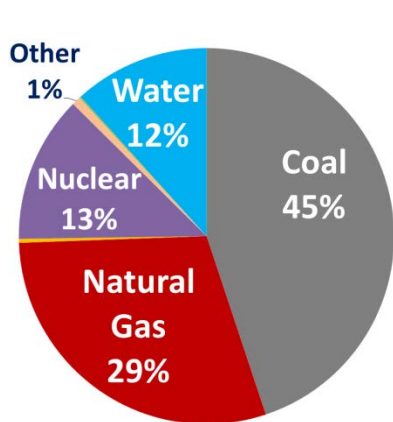
NE 37,026 MW



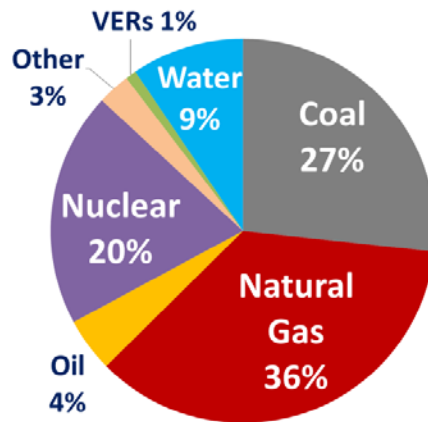
NY 44,405 MW



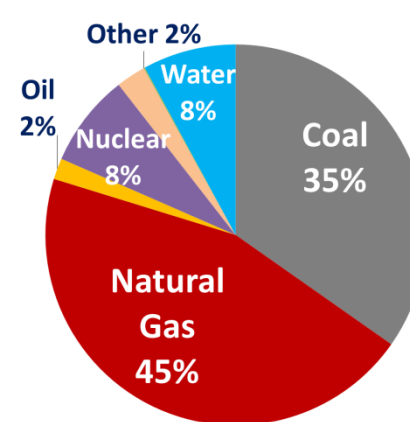
PJM 185,549 MW



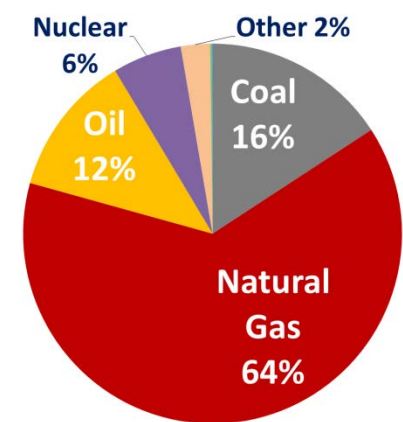
Central 58,332 MW



VACAR 287,674 GWh



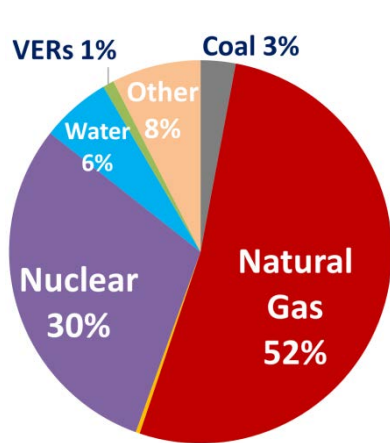
SE 77,163 MW



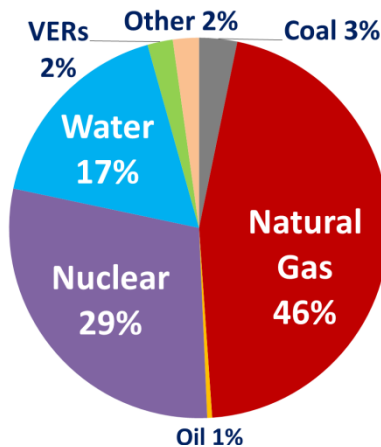
FRCC 65,696 MW

Source: Data derived from Ventyx, Velocity Suite, February 2015.

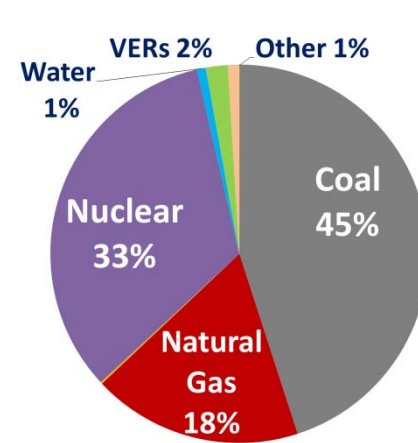
Electricity Generation by Sub-Regions



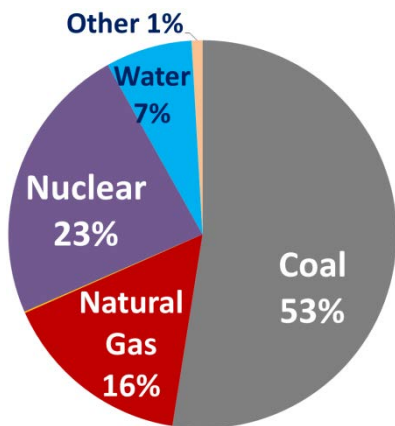
NE 119,844 GWh



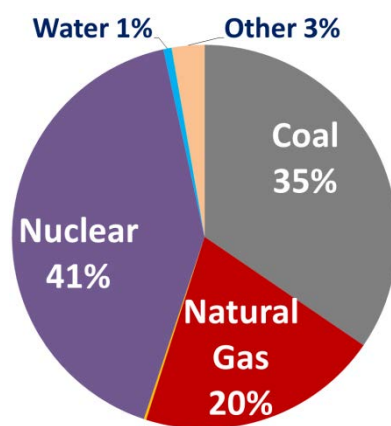
NY 140,546 GWh



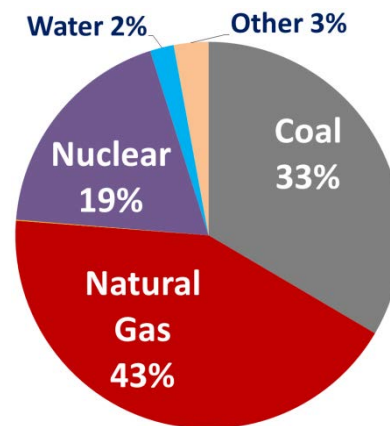
PJM 732,180 GWh



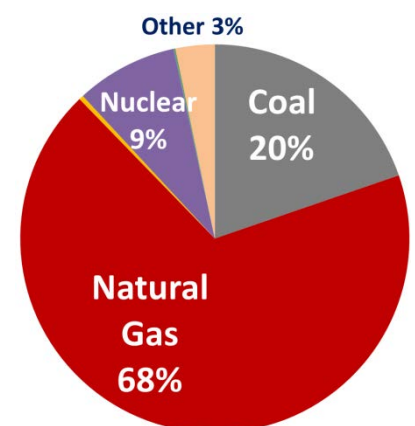
Central 218,609 GWh



VACAR 287,674 GWh



SE 258,539 GWh

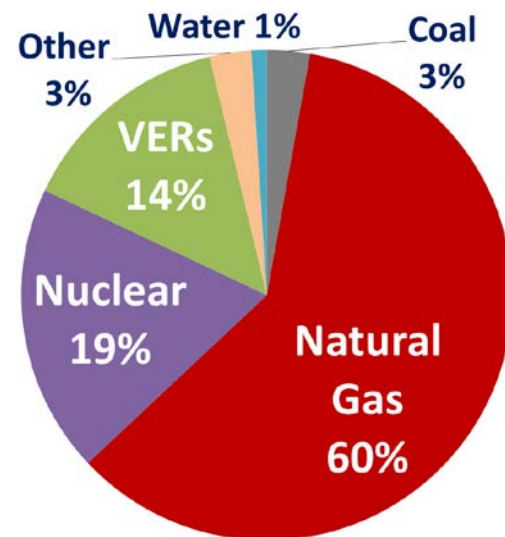
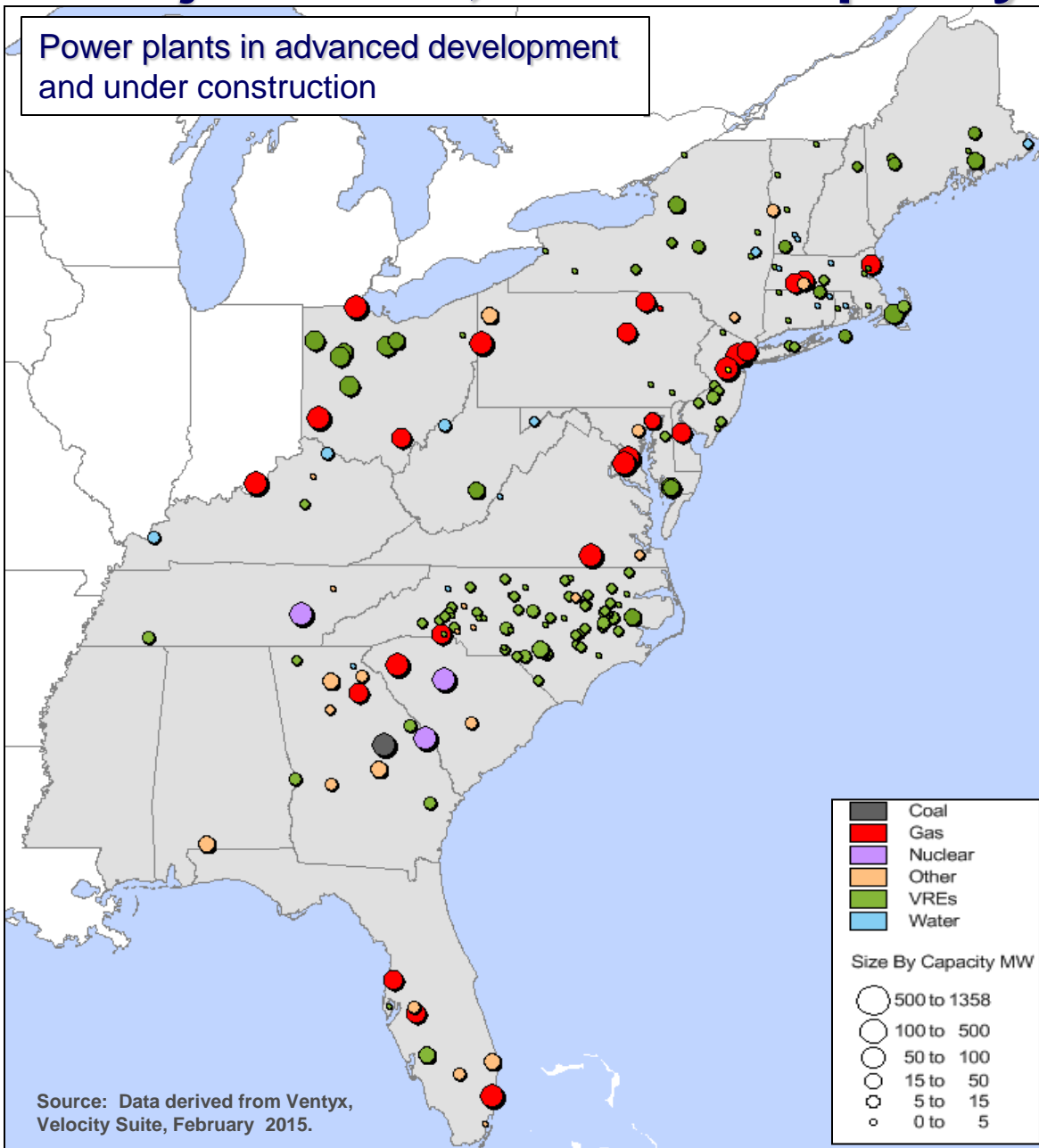


FRCC 211,312 GWh

Source: Data derived from Ventyx, Velocity Suite, February 2015.

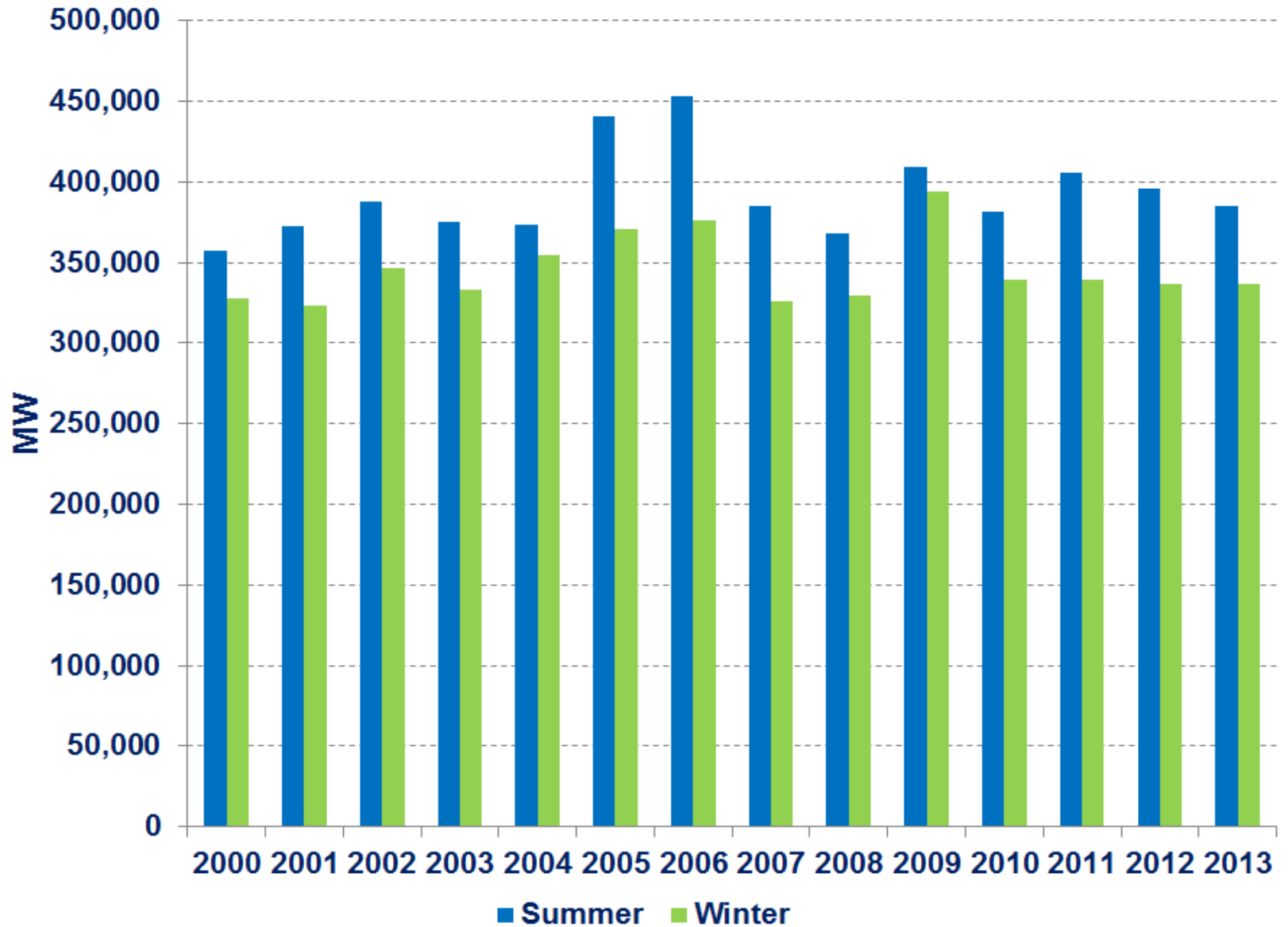
Projected 30,160 MW Capacity Additions by 2025

Power plants in advanced development and under construction



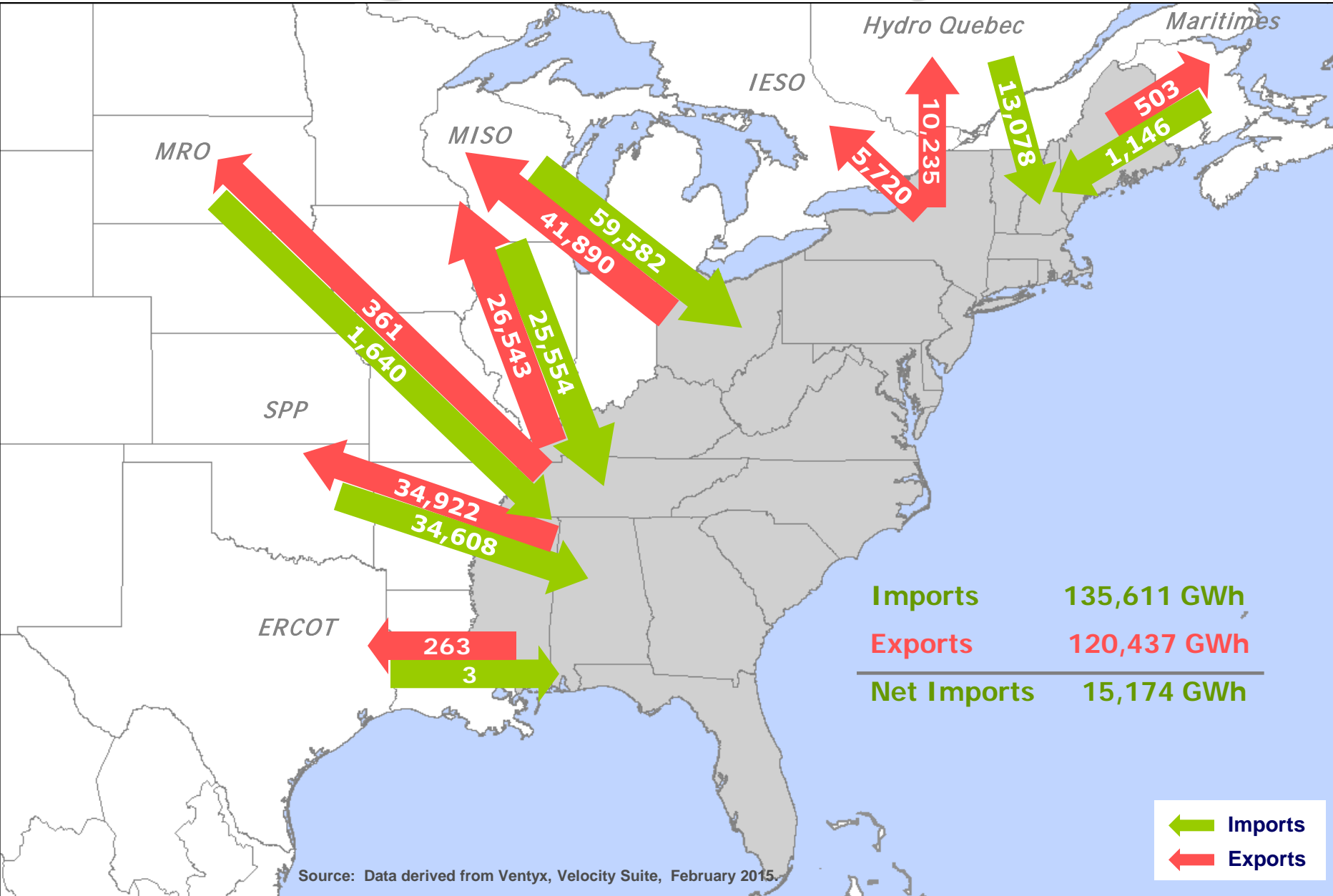
• Another 85,854 MW are in early development stage.

Peak Demand



Source: The North American Electric Reliability Corporation's 2014 Electric Supply and Demand Database.

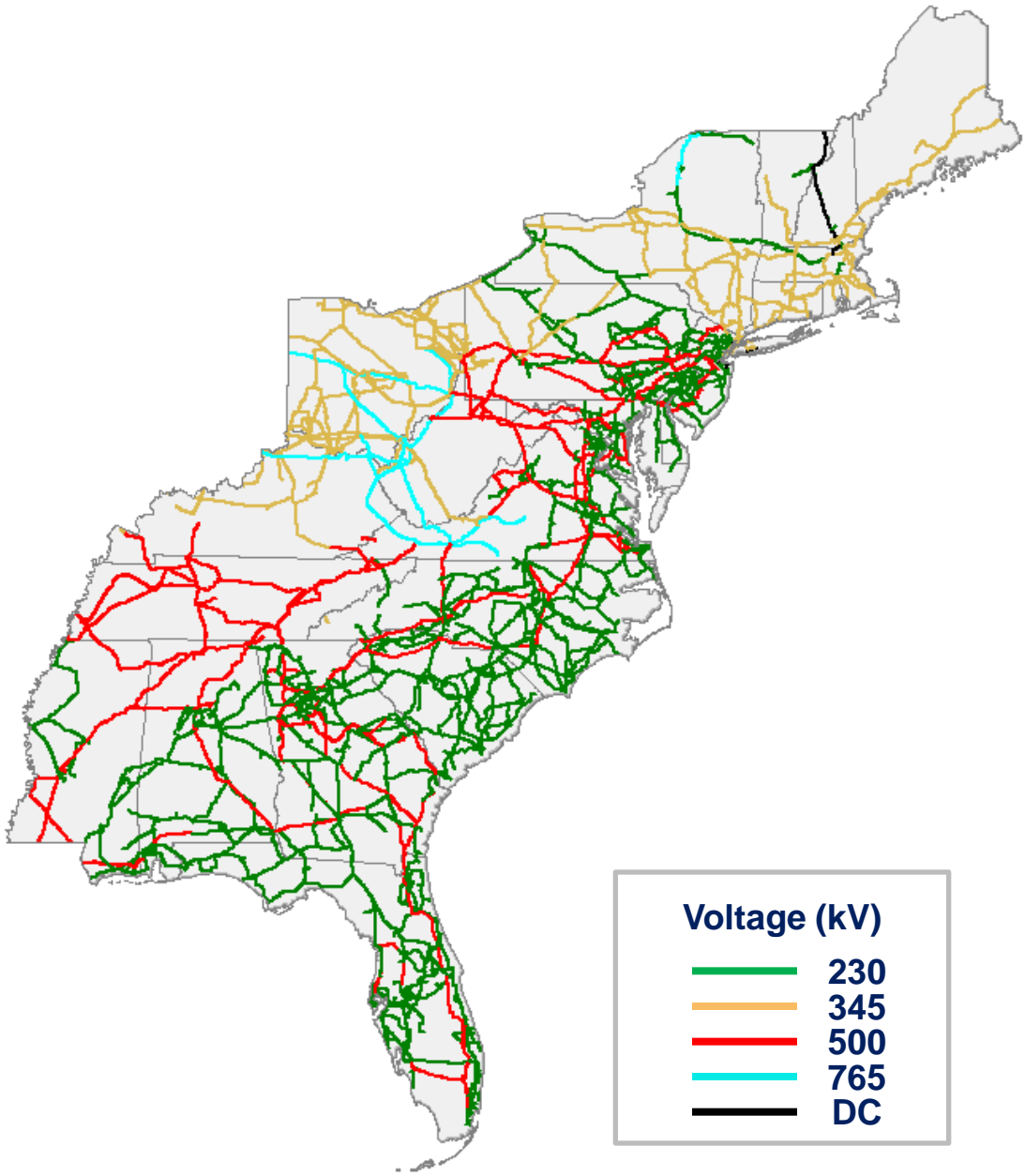
Net inter-regional deliverability 2012 (in GWh)



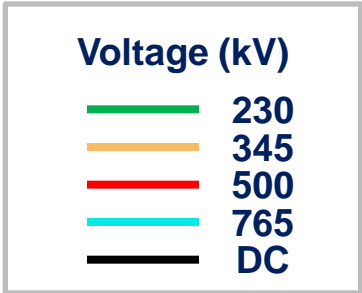
Source: Data derived from Ventyx, Velocity Suite, February 2015.

← Imports
← Exports

Existing Transmission

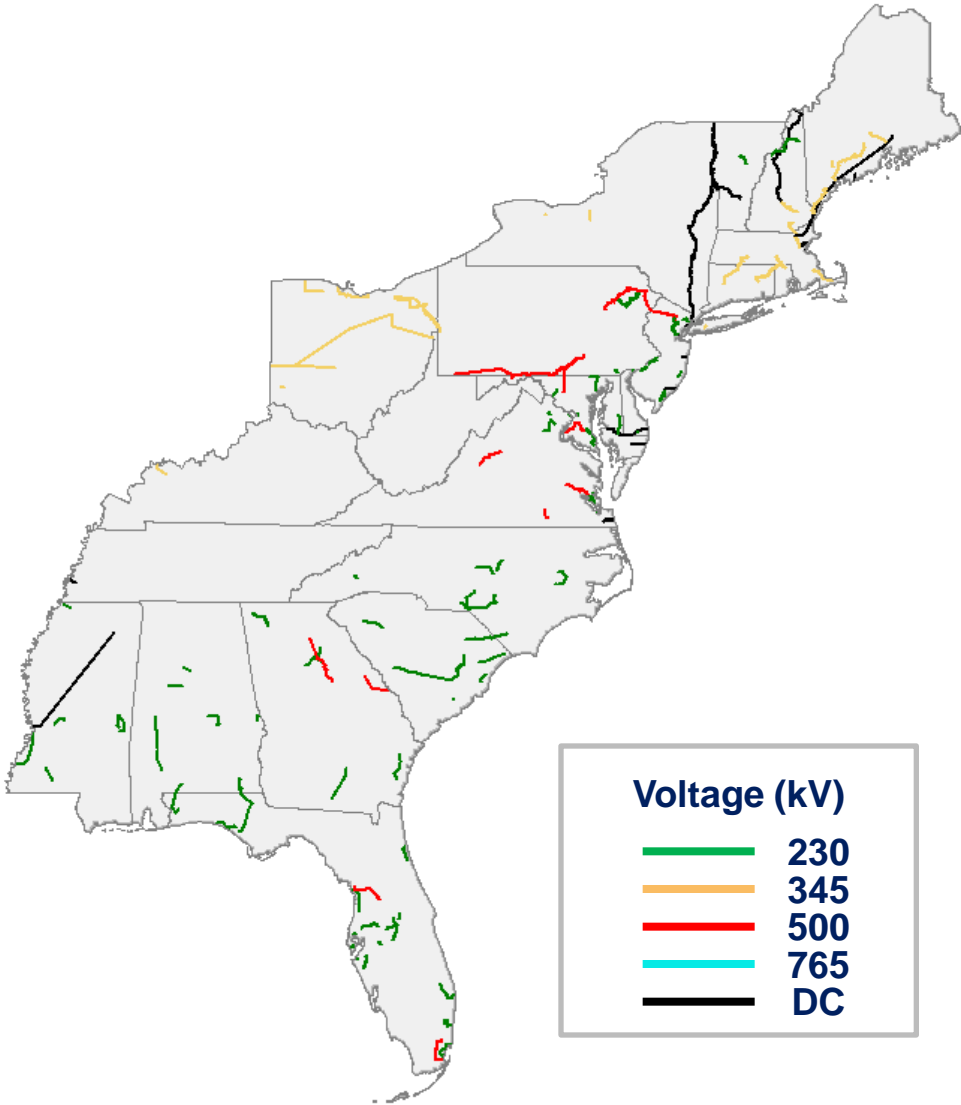


Voltage (kV)	Line Length (Miles)
230	32,772
345	16,376
500	11,046
765	2,361
DC	348
Total	62,903



Source: Data Derived from 2014 NERC Electric Supply and Demand Database; Ventyx, Velocity Suite, February 2015 and Staff Database.

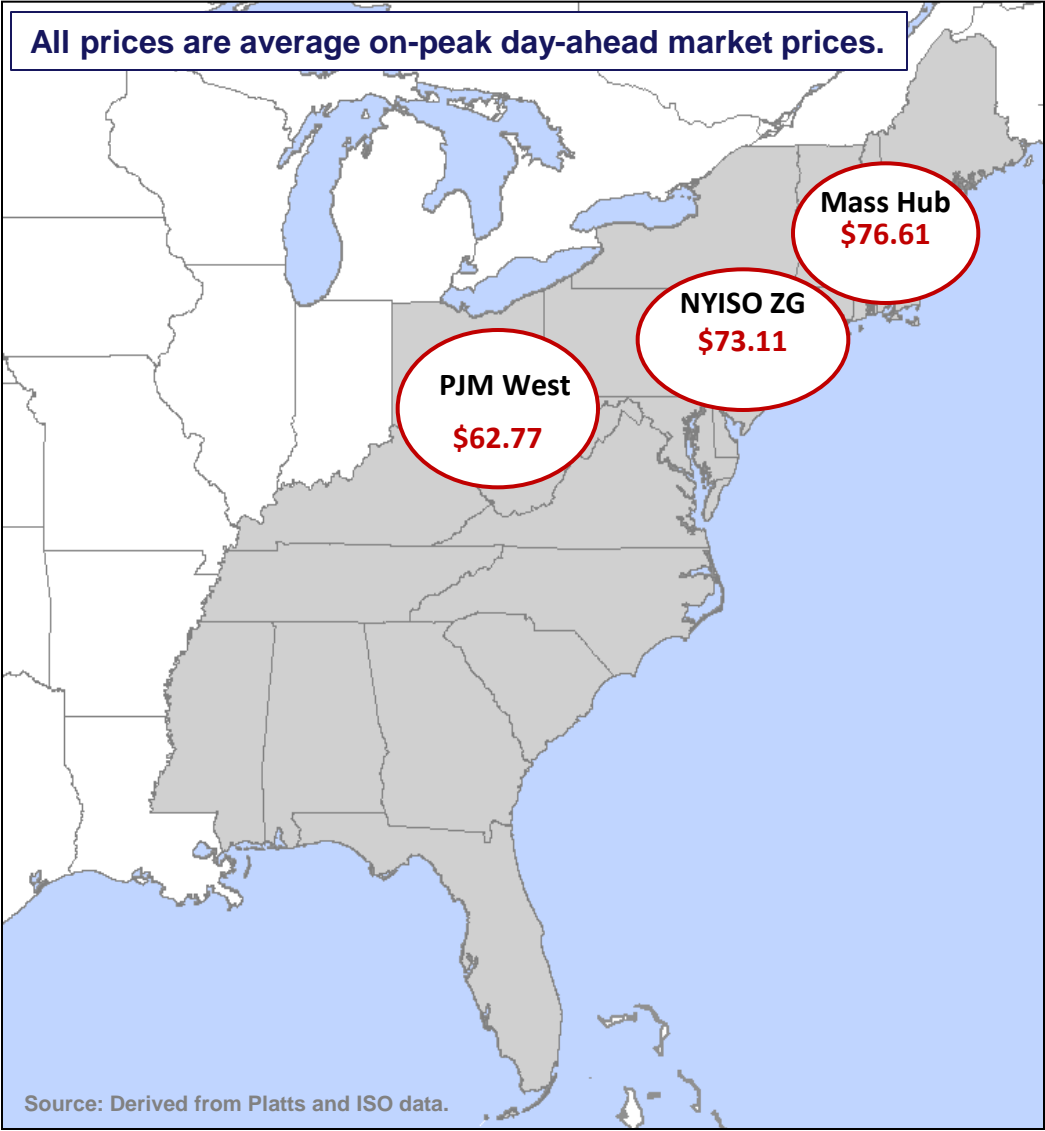
Projected Transmission through 2030



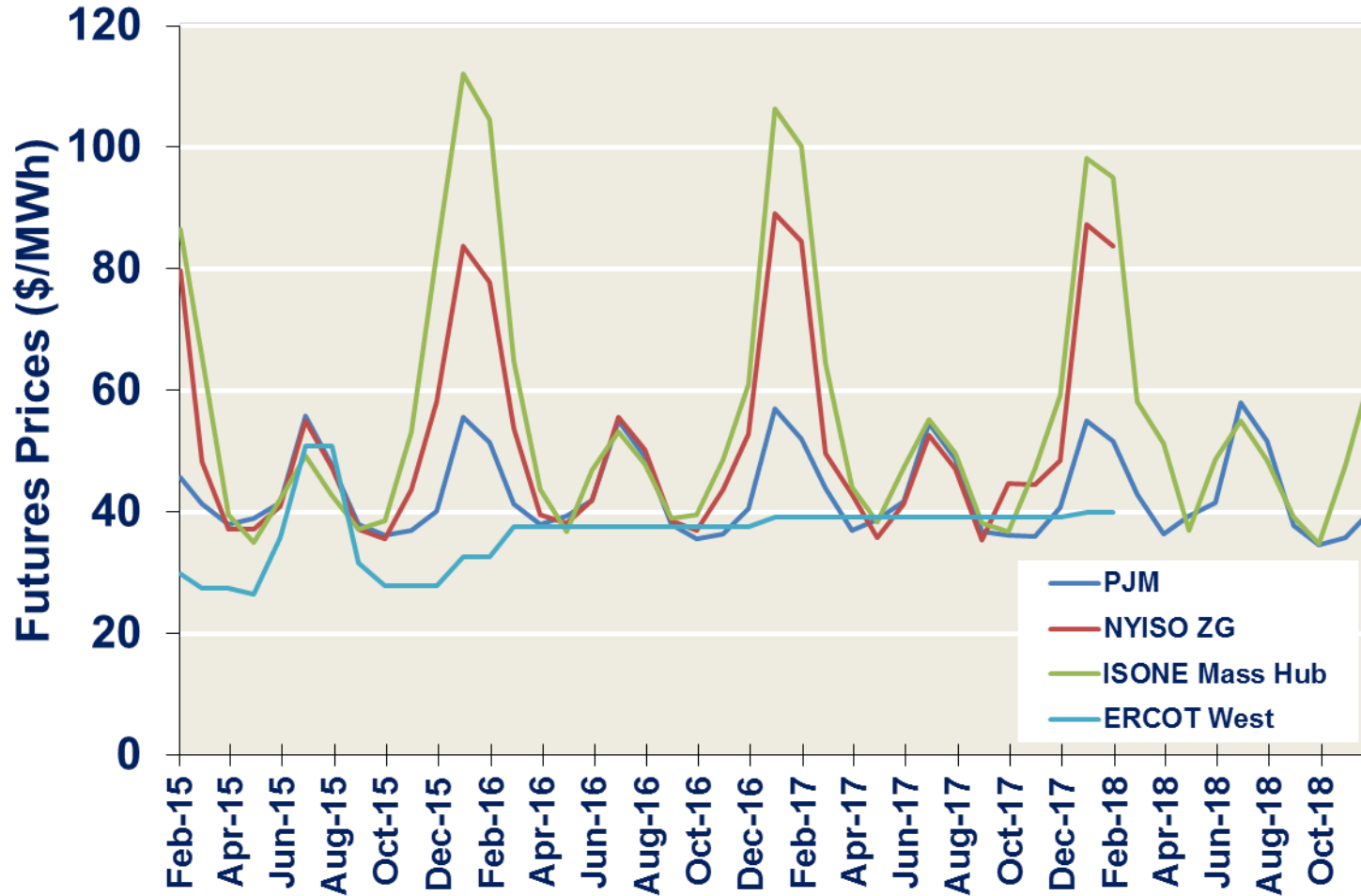
Voltage (kV)	Line Length (Miles)	Investment Cost (Millions \$)
230	1,871	3,412
345	1,931	8,712
500	1,458	8,129
765	1	65
DC	2,534	16,800
Total	7,795	37,118

Sources: Data Derived from 2014 NERC Electric Supply and Demand Database; Ventyx, Velocity Suite, February 2015 and Staff Database.

Electricity Prices 2014 (\$/MWh)



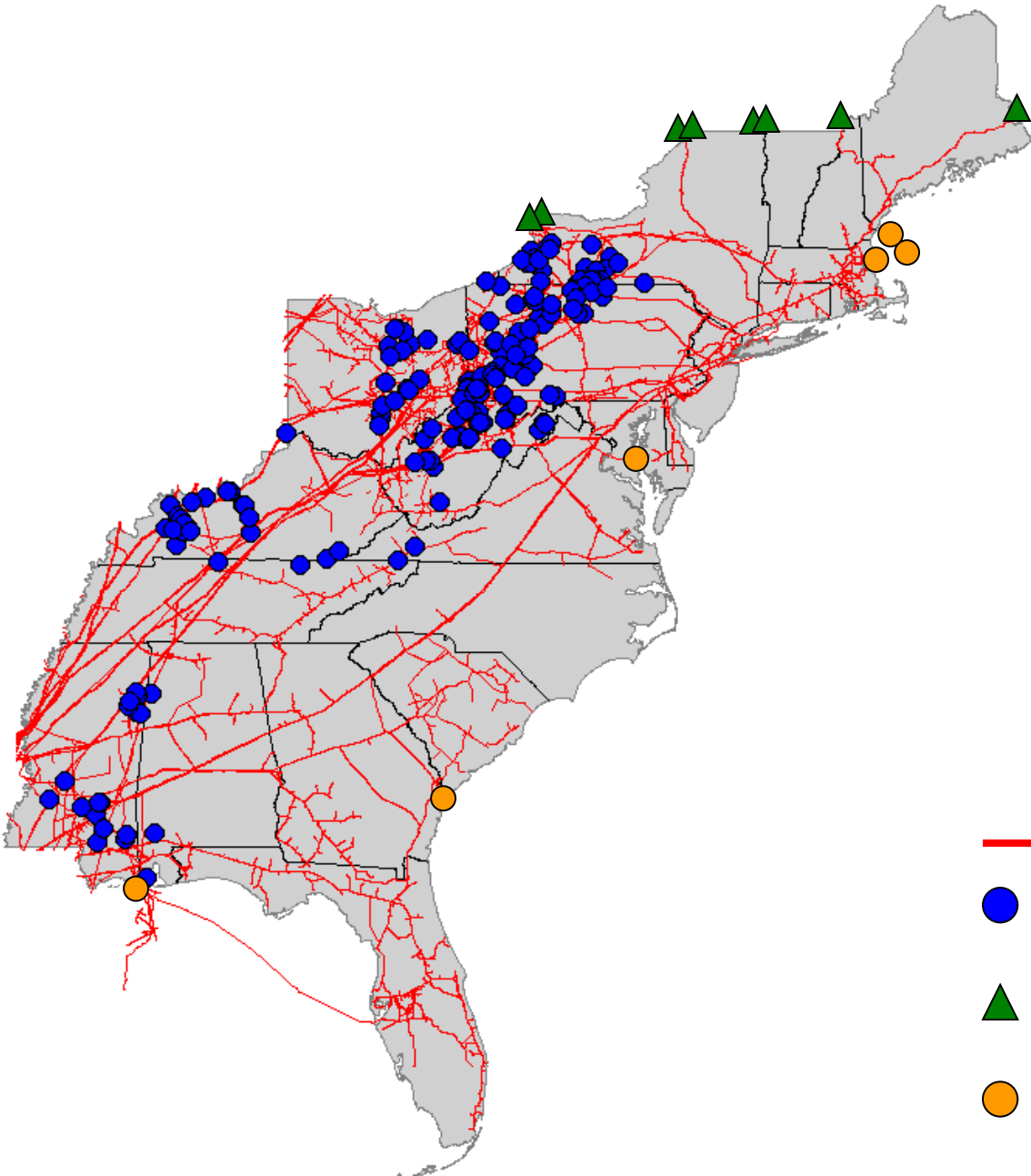
Electricity Futures (\$/MWh)



Source: Data derived from NYMEX

GAS INFRASTRUCTURE

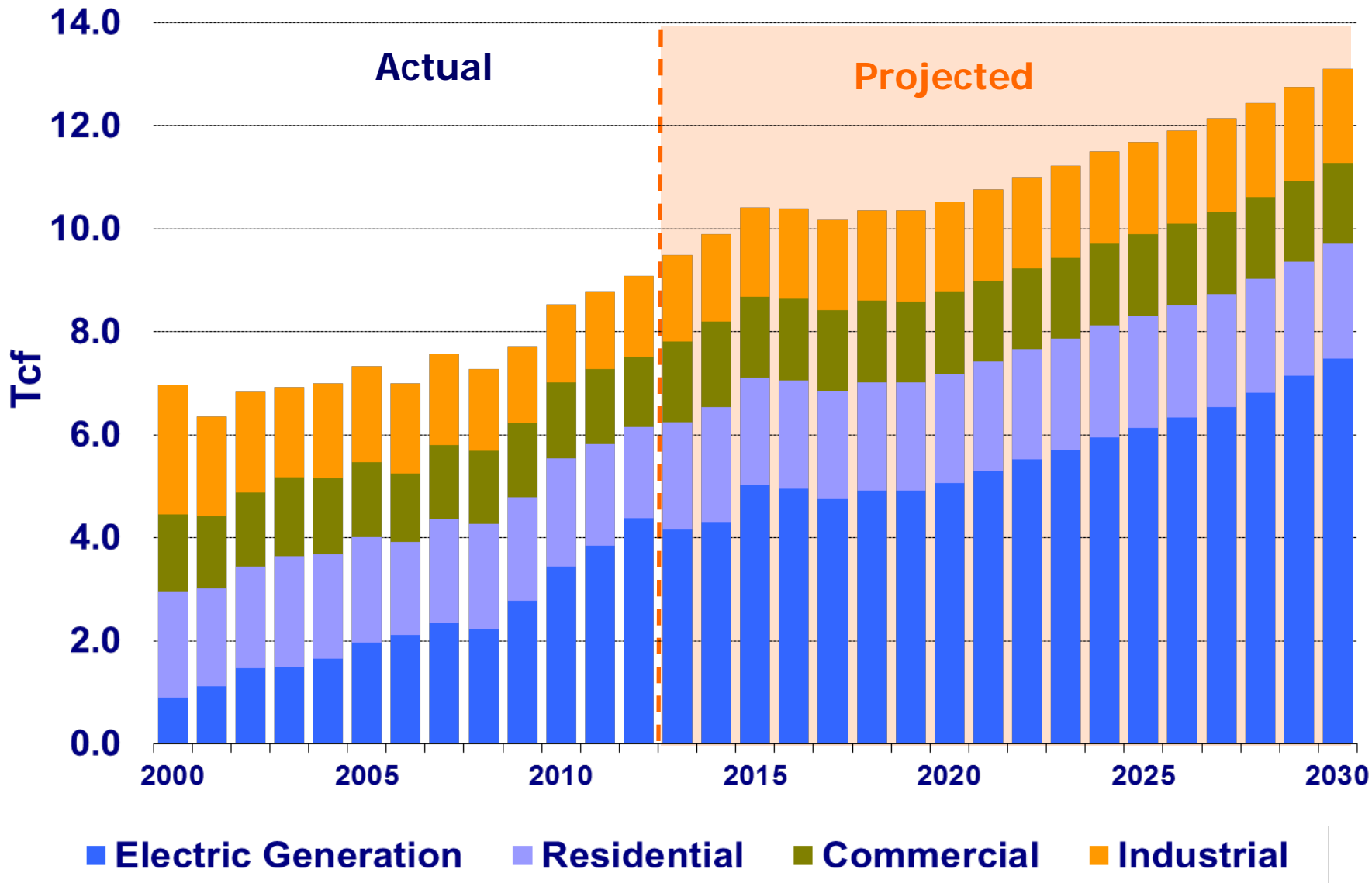
Natural Gas Infrastructure



- Interstate Natural Gas Pipelines
- Natural Gas Storage Facilities
- ▲ Natural Gas Import/Export Points With Canada
- LNG Terminals

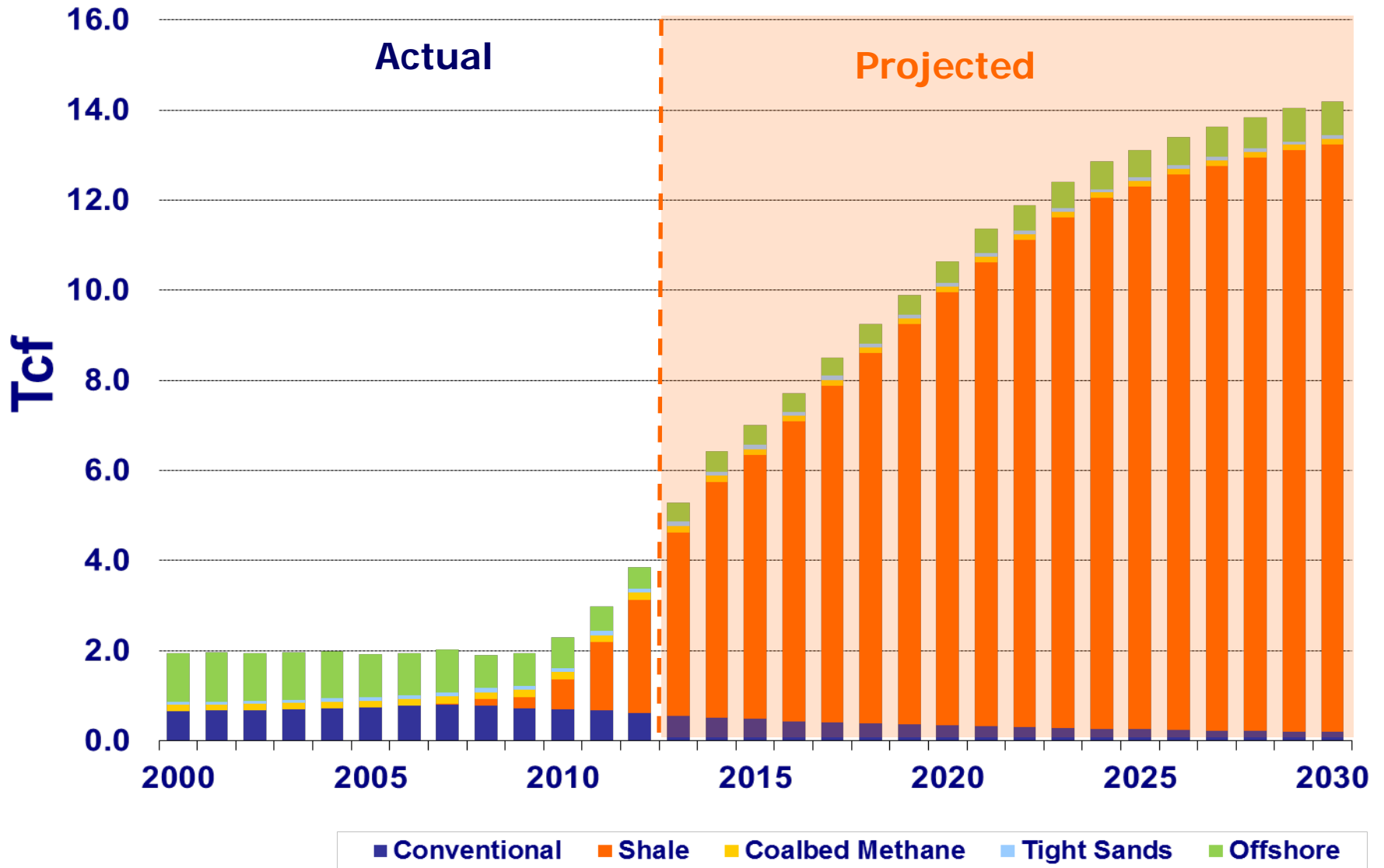
Source: Data derived from Ventyx, Velocity Suite, February 2015; ICF International January 2015 Data Base; and Fossil Energy 3rd Quarter Report 2014

Eastern Natural Gas Consumption



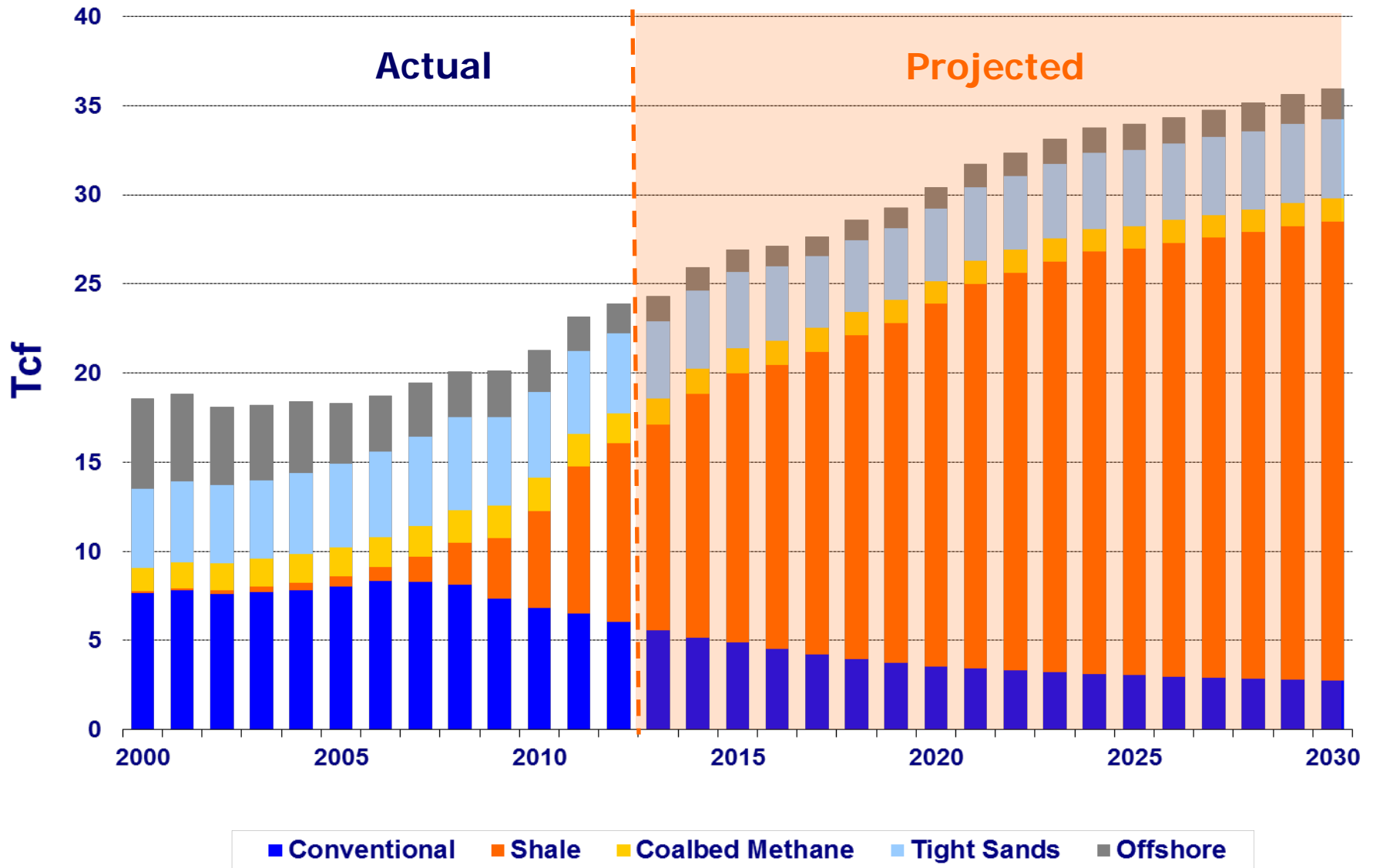
Source: ICF International January 2015 Data Base and Compass Report

Eastern Natural Gas Production by Type



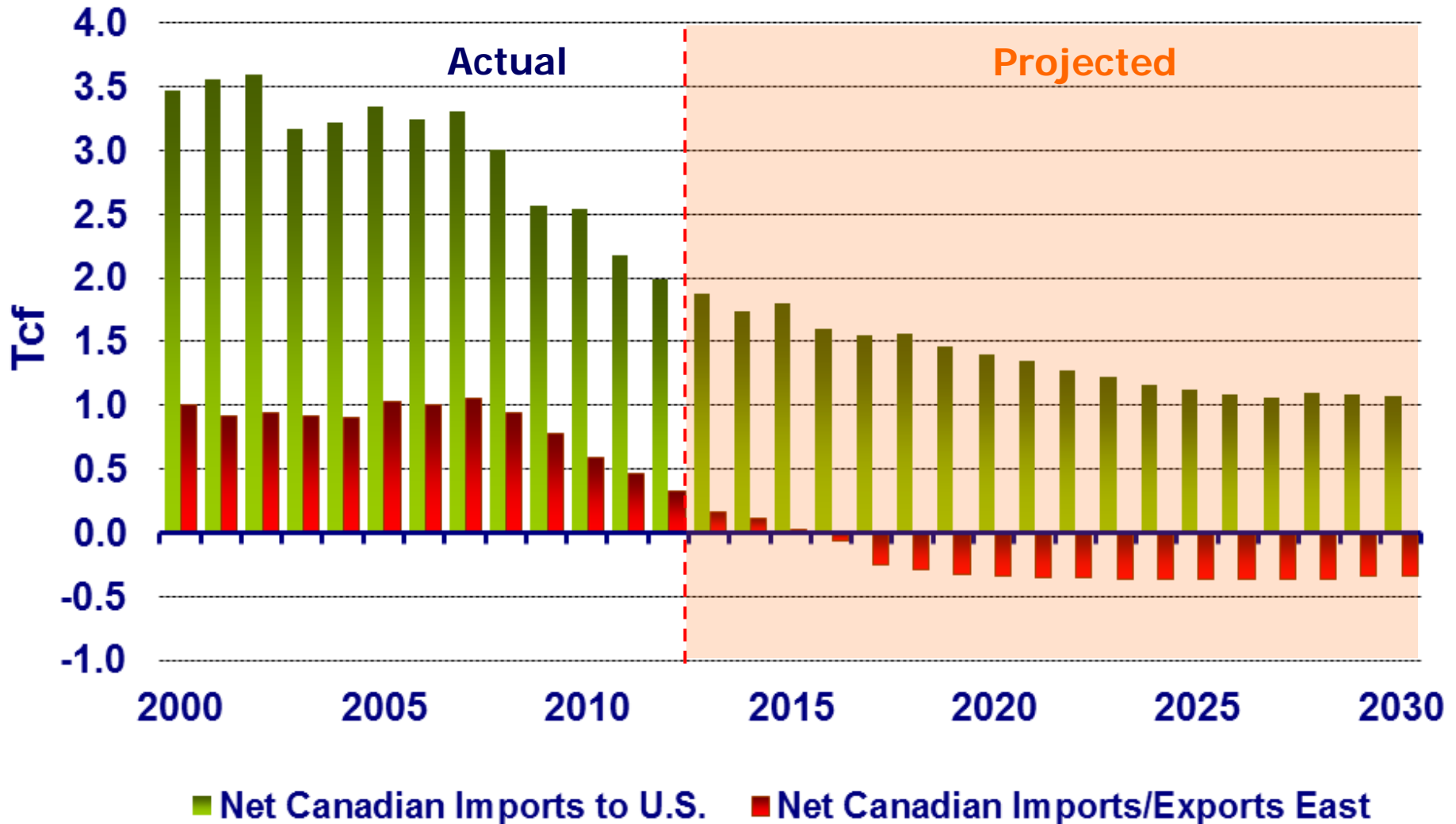
Source: ICF International January 2015 Data Base and Compass Report

U.S Natural Gas Production by Type



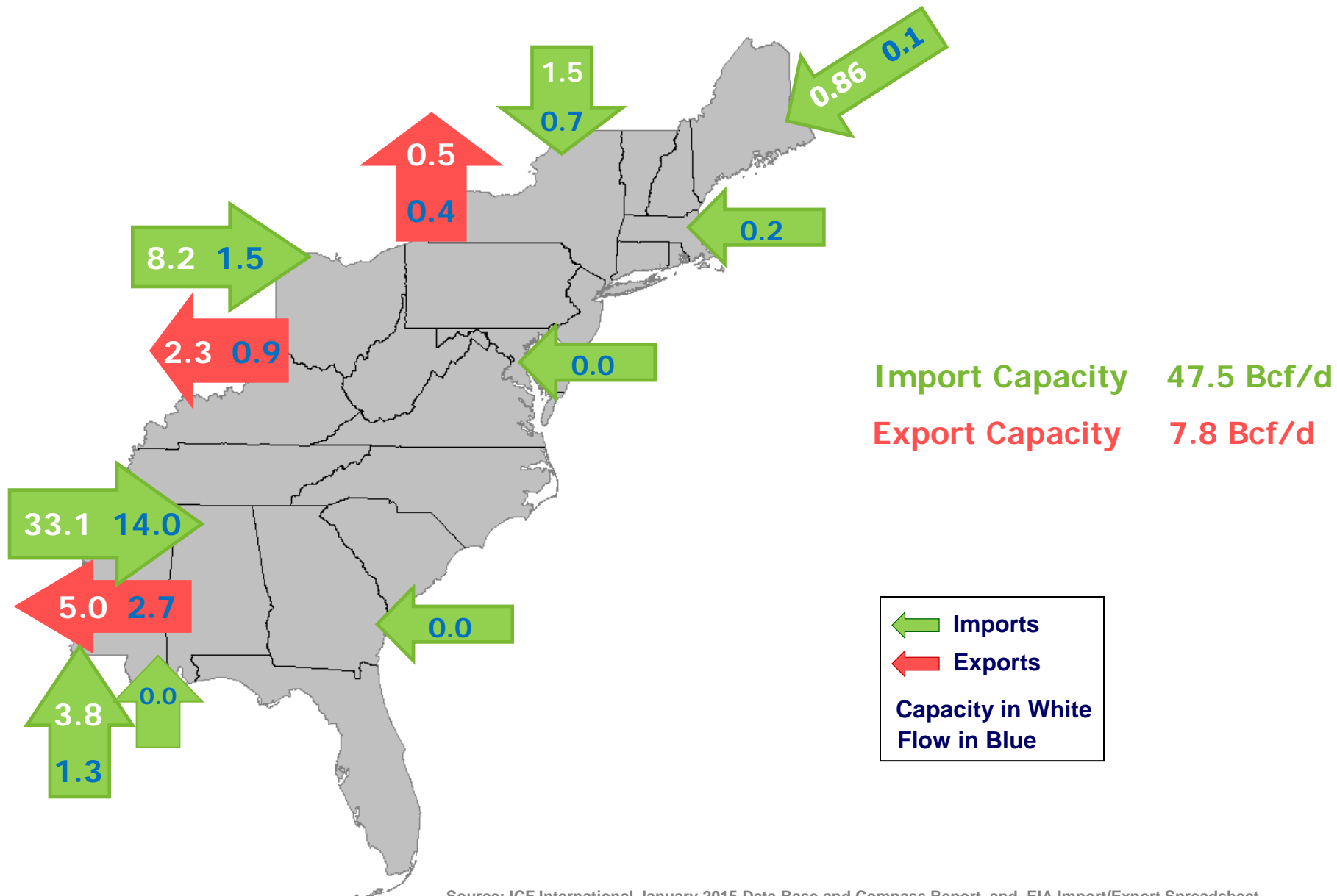
Source: ICF International January 2015 Data Base and Compass Report

Actual and Projected Net Canadian & U.S. Imports/Exports



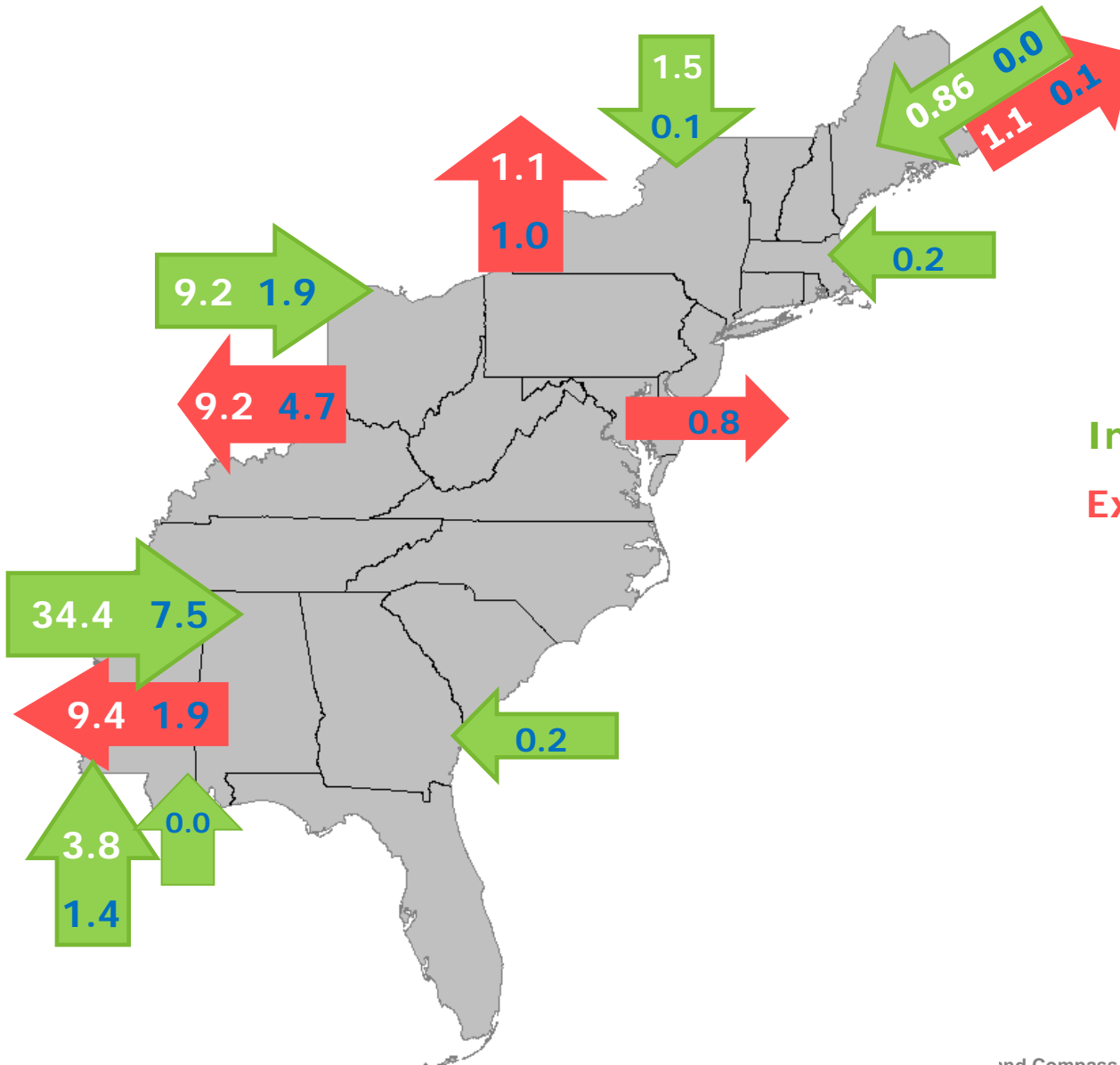
Source: ICF International January 2015 Data Base and Compass Report; and EIA Natural Gas Annuals and Spreadsheets

Net Interregional Deliverability 2013 (in Bcf/d)



Source: ICF International January 2015 Data Base and Compass Report, and EIA Import/Export Spreadsheet.

Net Interregional Deliverability 2020 (in Bcf/d)



Import Capacity 49.8 Bcf/d
 Export Capacity 20.8 Bcf/d

← Imports

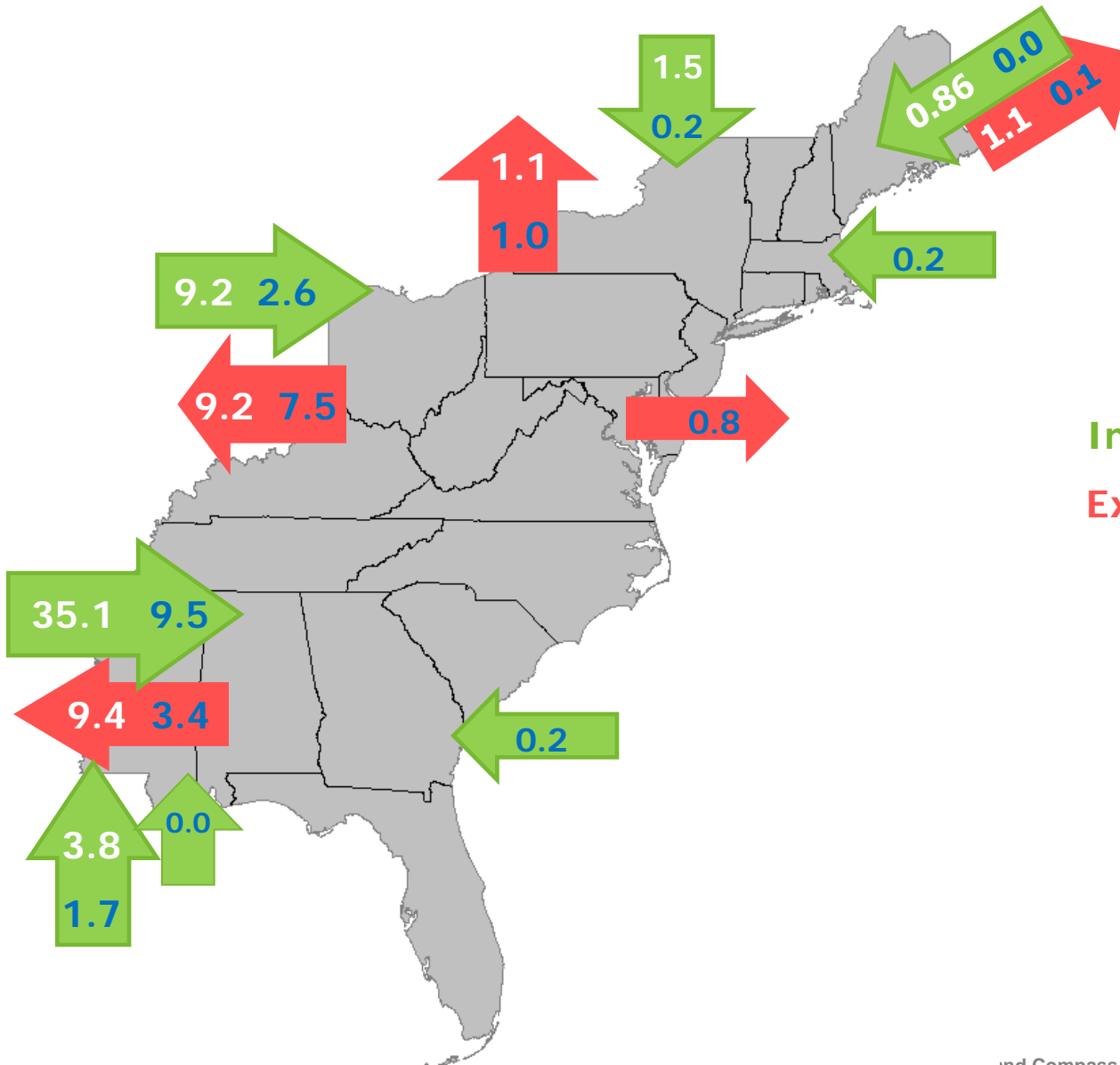
← Exports

Capacity in White

Flow in Blue

and Compass Report, and EIA Import/Export Spreadsheet.

Net Interregional Deliverability 2030 (in Bcf/d)



Import Capacity 50.5 Bcf/d
 Export Capacity 20.8 Bcf/d

← Imports
 ← Exports

Capacity in White
 Flow in Blue

and Compass Report, and EIA Import/Export Spreadsheet.

Gas Facts (In Tcf)

	2013		2020		2030	
	United States	East	United States	East	United States	East
Total Gas Consumption	26.4	9.9	27.6	11.2	31.3	14.0
Total Gas Production	24.3	5.4	30.4	10.7	36.0	14.3
Total Working Storage Capacity	4.4	1.4	4.7	1.4	4.8	1.4
Total LNG Imports	0.1	0.085	0.19	0.15	2.0	0.15
Total LNG Exports	0.0	0.0	2.38	0.29	2.41	0.29
Total Net Imports & Exports from Canada	1.9	0.2	1.4	-0.3	1.1	-0.3
Total Net Exports to Mexico	0.7	0.0	1.9	0.0	2.5	0.0

Source: ICF International Q4 2013 and Q1 2015 Data Bases and Compass Reports, and EIA Spreadsheets for 2013 data on LNG imports, and Canadian & Mexican import/exports

Natural Gas Prices 2014 (\$/MMBtu)

