



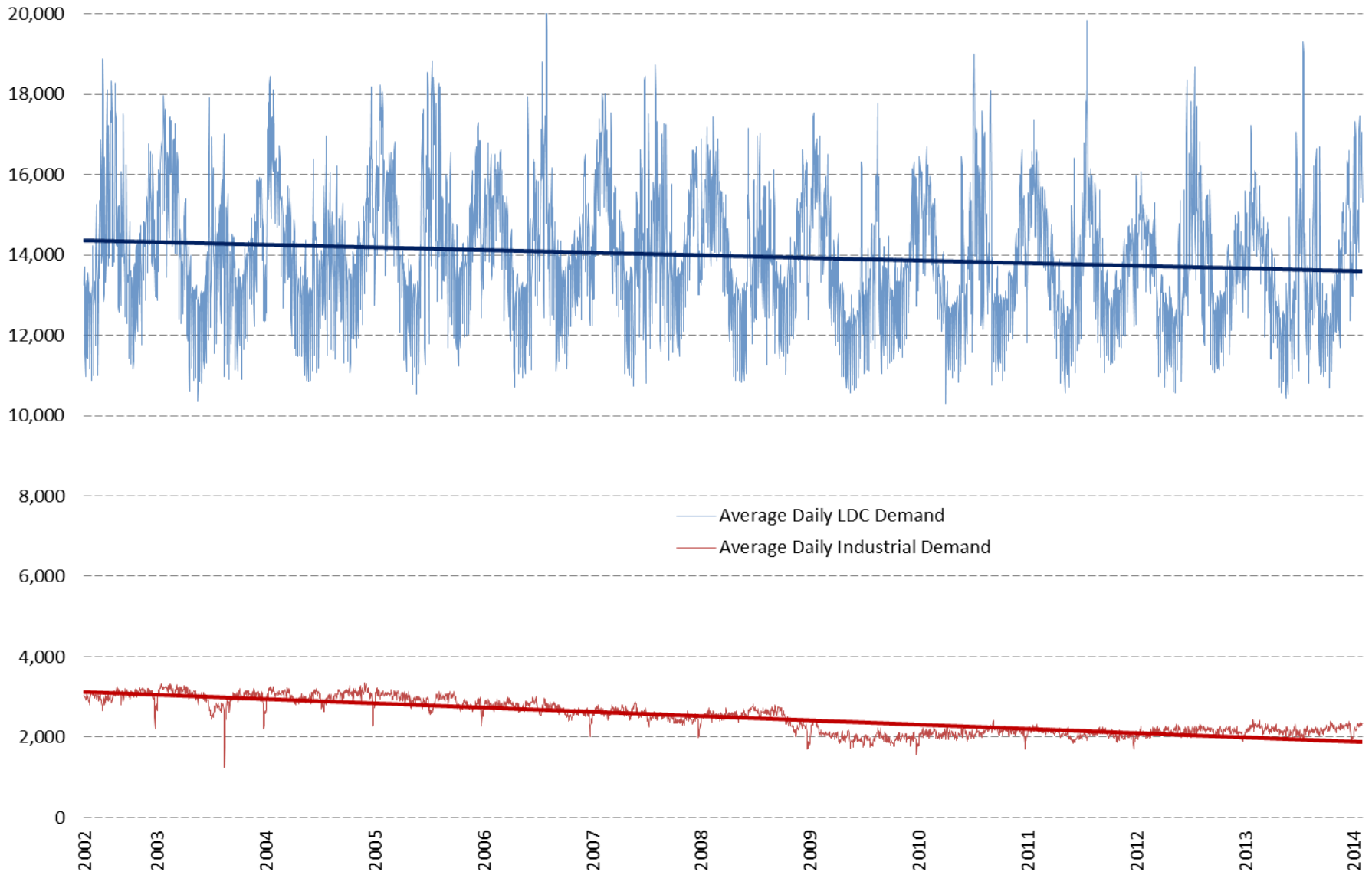
**PowerLogic  
Users Group Conference  
2014**

Outlook for electricity demand  
and supply in Ontario

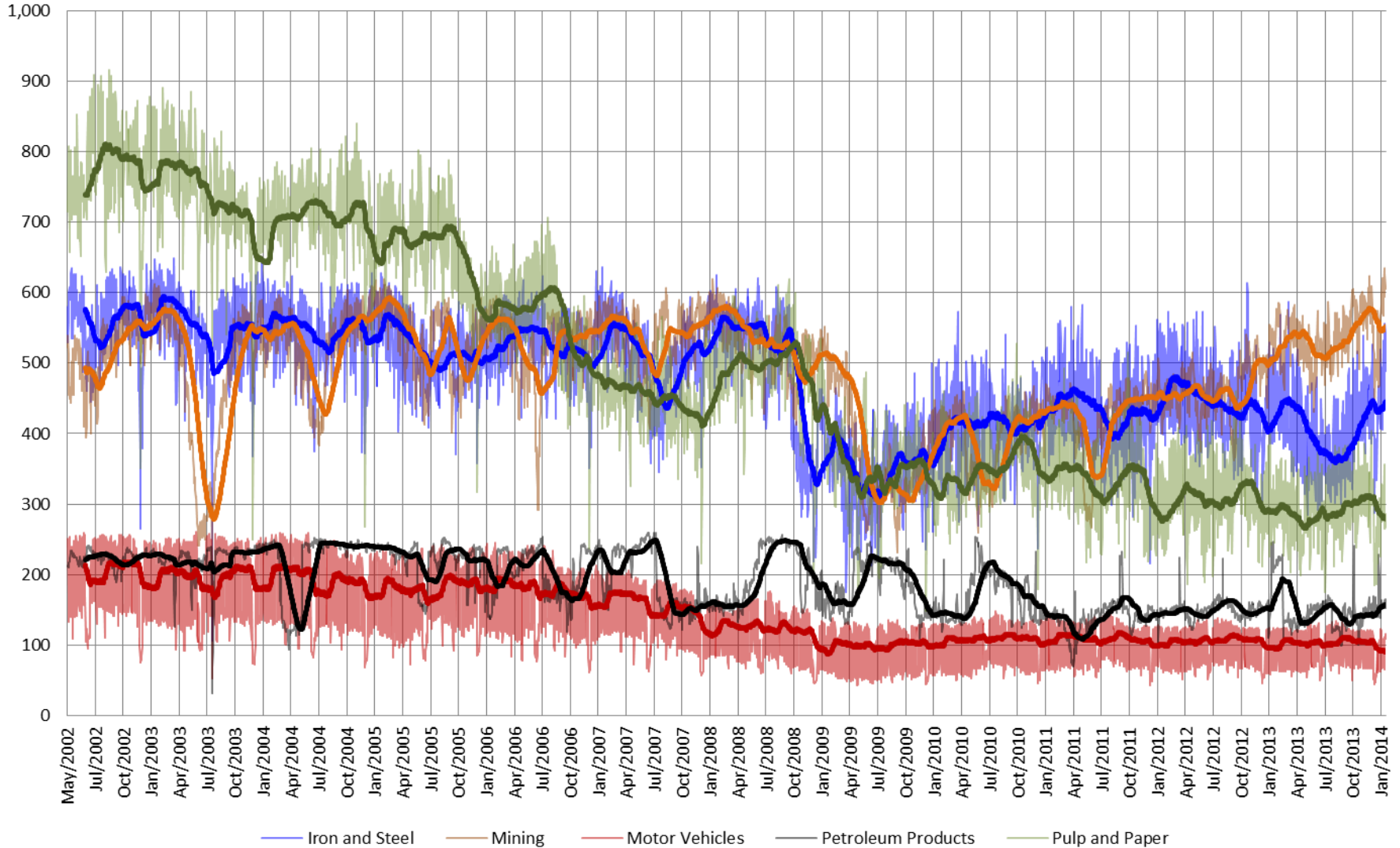
# Demand

- Market demand
  - Published by IESO hourly in real time
  - Total generation plus losses plus net exports
- Ontario demand
  - Published by IESO hourly in real time
  - Total generation plus losses
- “Allocated quantity of energy withdrawn”
  - Published by the IESO 14 days after month end
  - The aggregate of metered demand at transmission voltage
  - Net of LDC-embedded generation

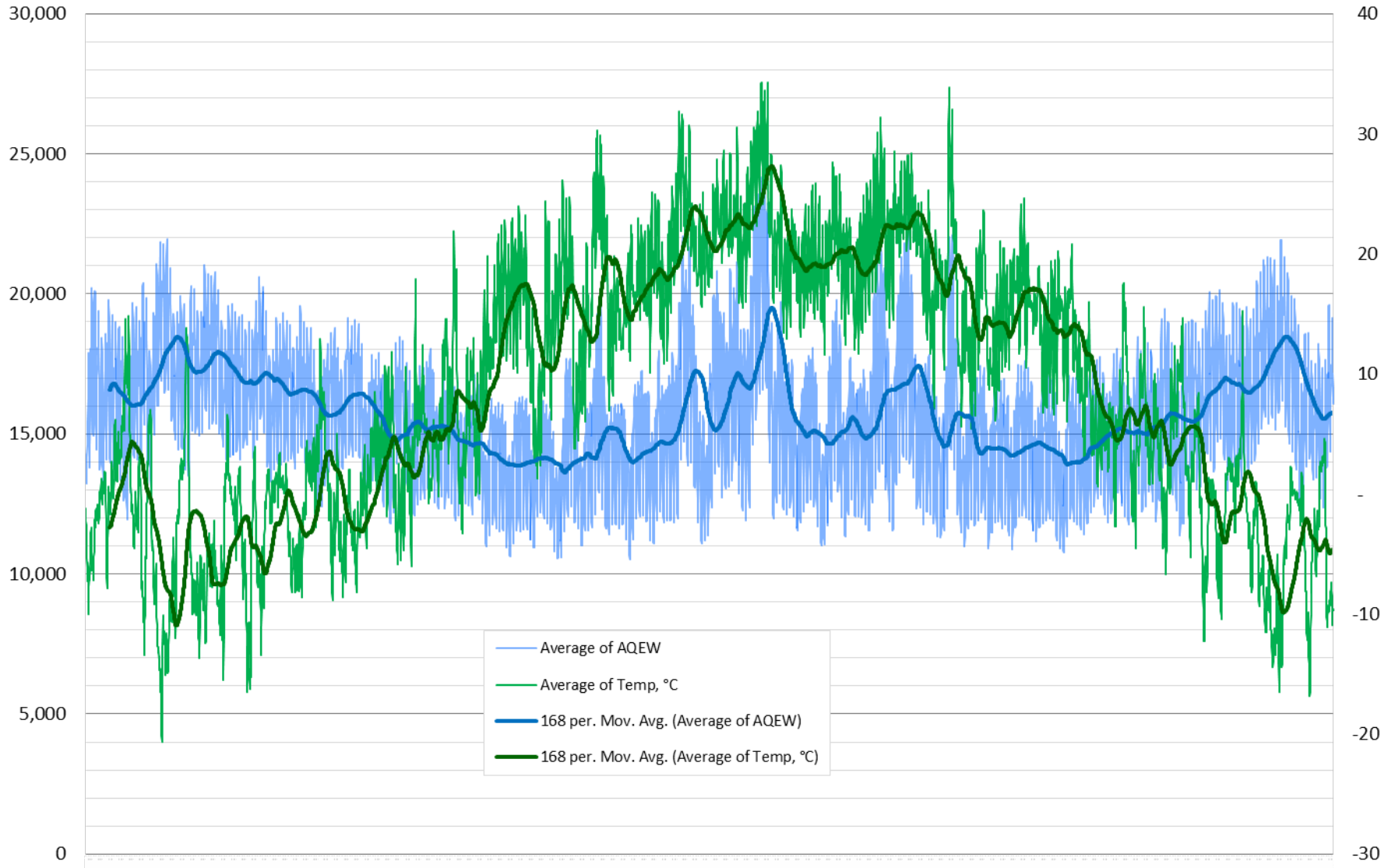
# Average Daily Allocated Quantity of Energy Withdrawn MW May 2002 to January 2014



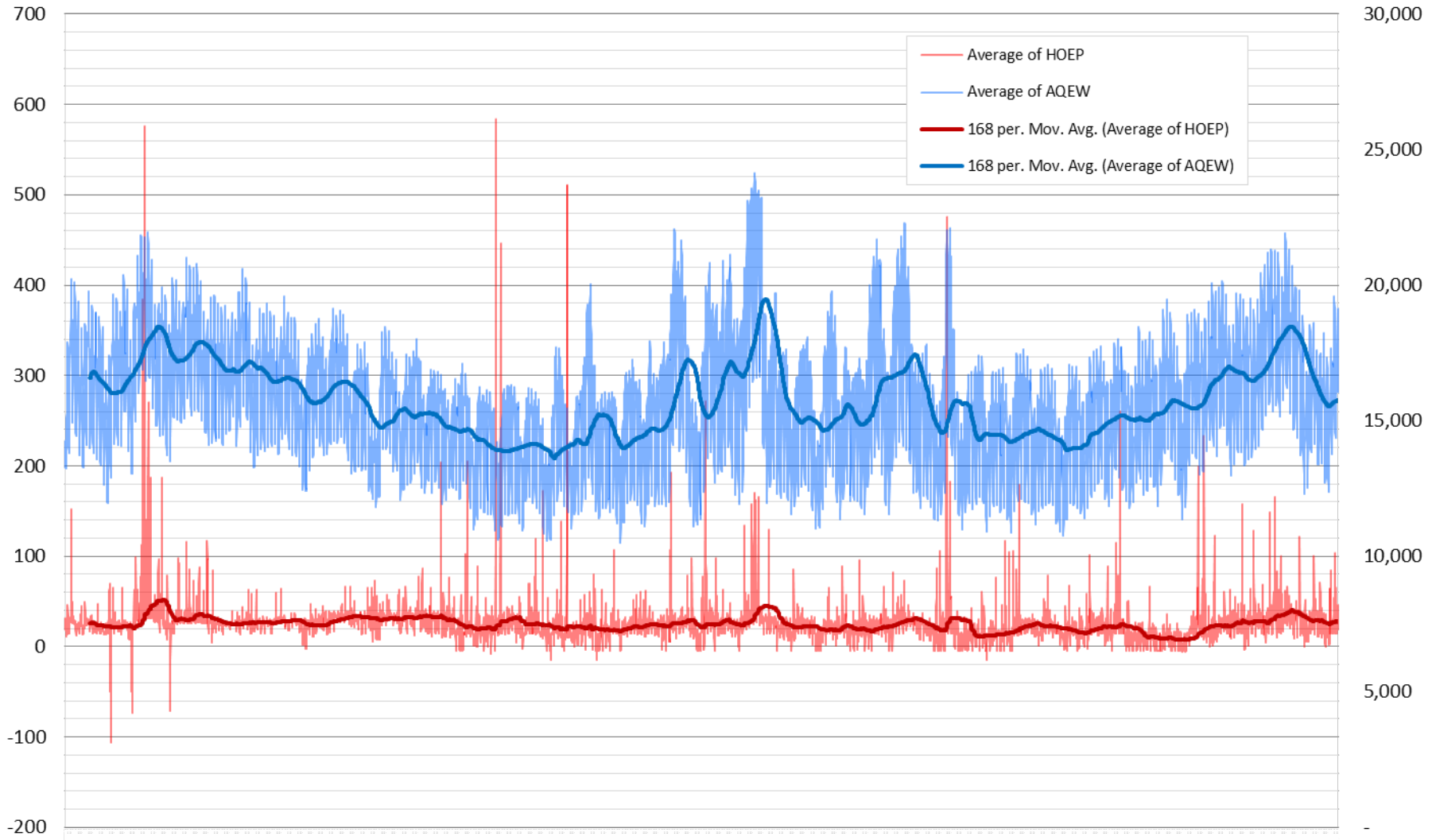
# Energy Consumption by Industrial Sector May 2002 to January 2014 MW Daily and moving 60 day average values



# Ontario hourly temperature and electricity consumption 2013

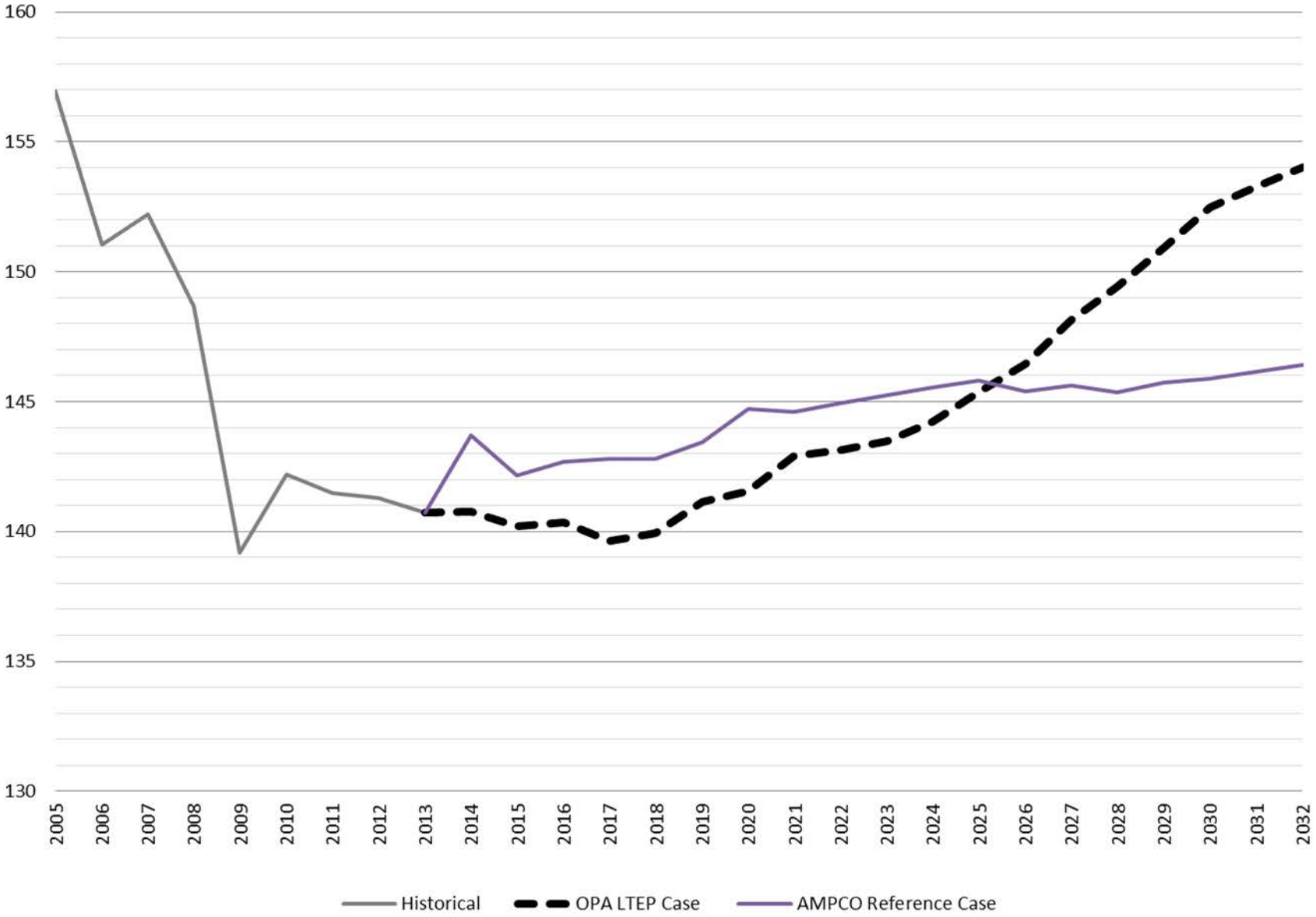


## Ontario hourly electricity consumption and energy price for electricity 2013 \$/MWh





# Ontario Net Energy Demand, TWh

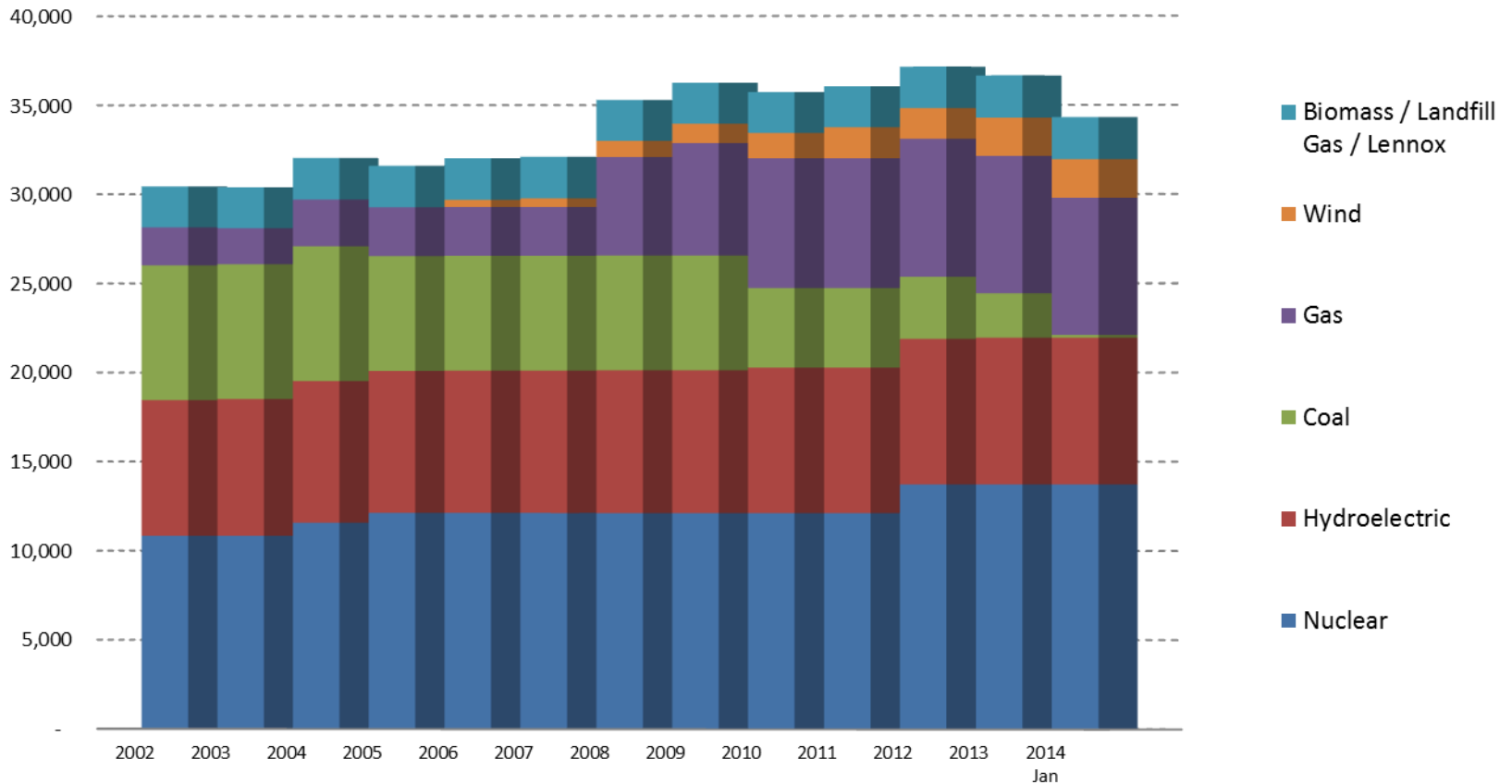


# Supply

- Base load
  - Hydro-electric
  - Nuclear
  - Wind
  - Solar
- Intermediate and peaking
  - Natural gas generation: “Clean Energy Supply” contracts
  - Lennox: dual-fuelled gas/oil thermal generator, reliability-must-run
  - Nuclear “manoeuvrability” during surplus energy conditions
- Dispatchable load and demand response
  - Transmission-connected end-use customers
  - OPA contracted demand response: DR2 and DR3

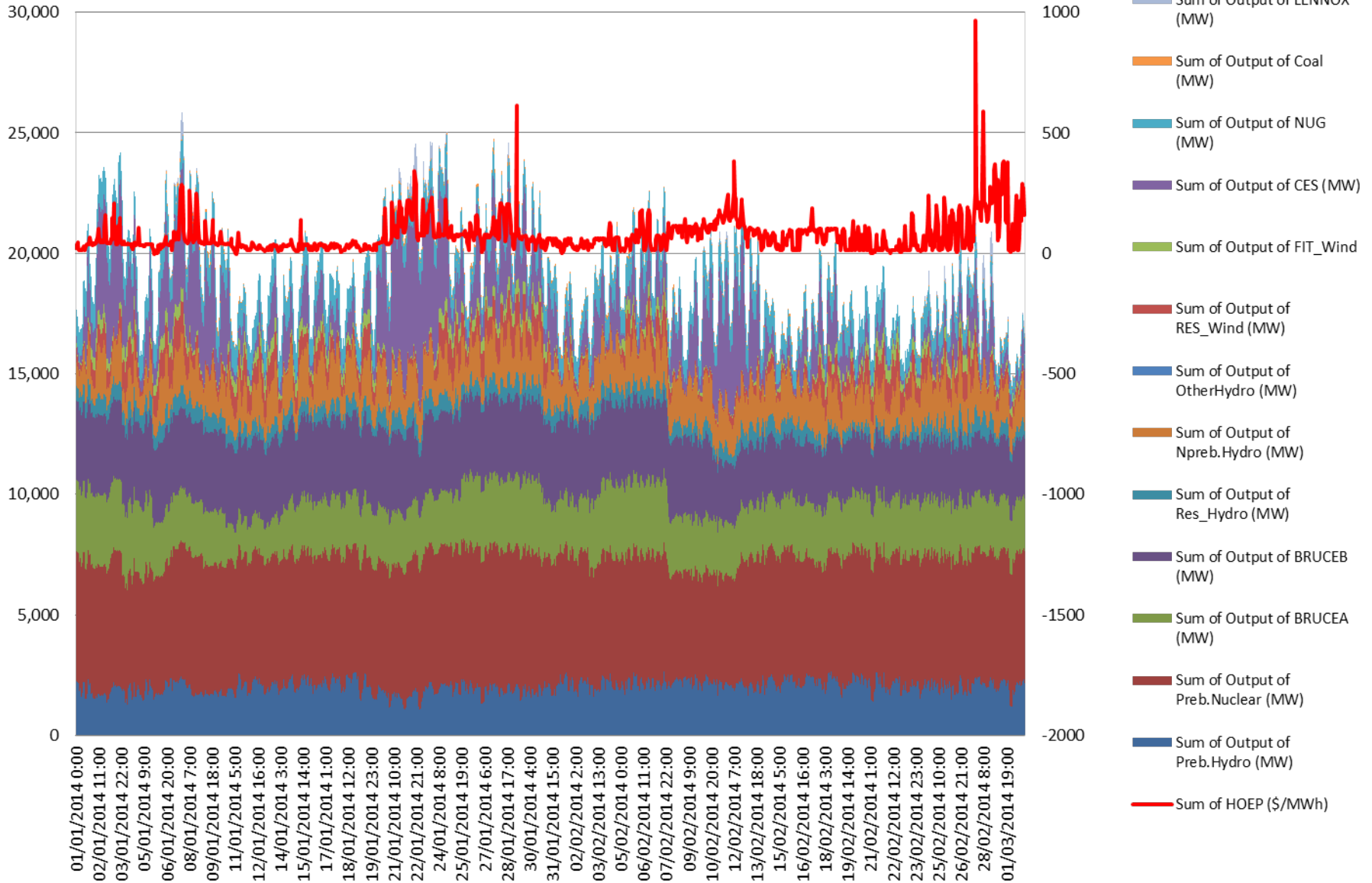


# Installed Generation Capacity by Fuel Type (MW)

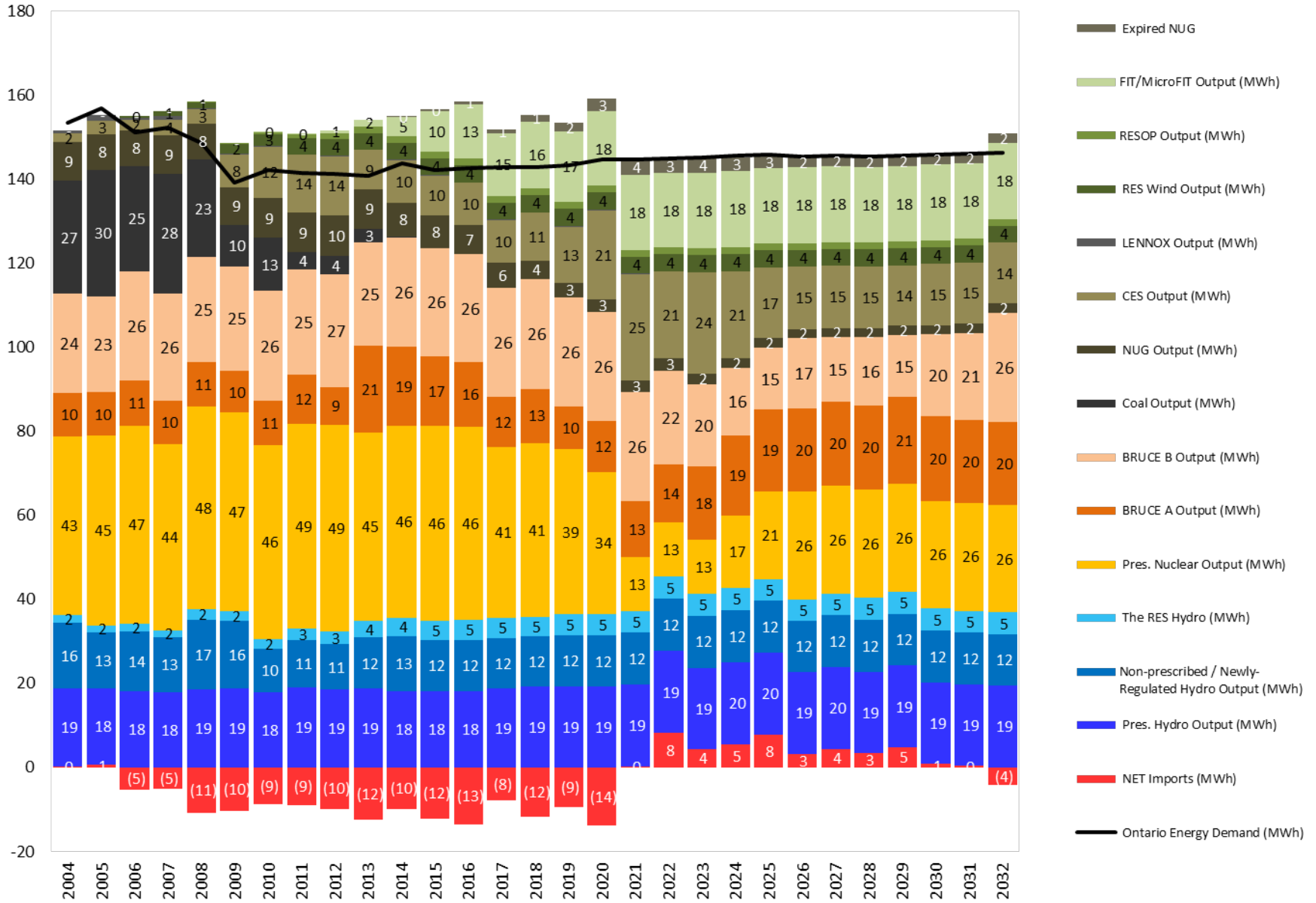


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014 Jan
Biomass / Landfill Gas / Lennox	2,300	2,300	2,332	2,332	2,332	2,332	2,300	2,300	2,300	2,300	2,313	2,362	2,362
Wind	-	-	-	-	403	480	904	1,086	1,414	1,728	1,728	2,156	2,156
Gas	2,135	2,014	2,616	2,744	2,744	2,744	5,520	6,298	7,285	7,285	7,741	7,692	7,692
Coal	7,563	7,563	7,563	6,433	6,433	6,433	6,433	6,433	4,463	4,463	3,483	2,493	153
Hydroelectric	7,615	7,682	7,950	7,970	7,986	7,986	8,011	8,011	8,150	8,150	8,150	8,221	8,221
Nuclear	10,836	10,836	11,577	12,119	12,119	12,119	12,119	12,119	12,119	12,119	13,729	13,729	13,729

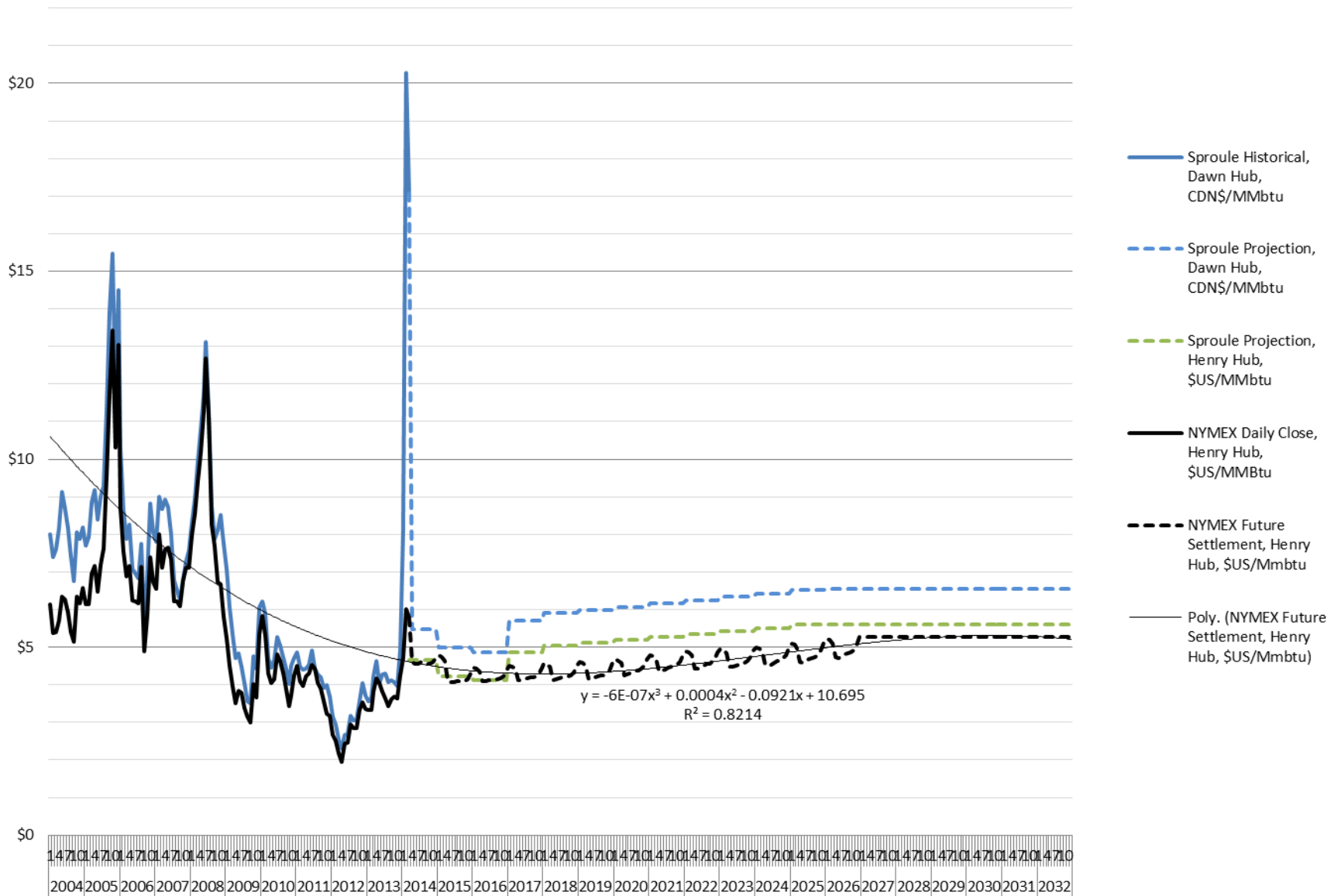
# Generator output and Hourly Ontario Energy Price



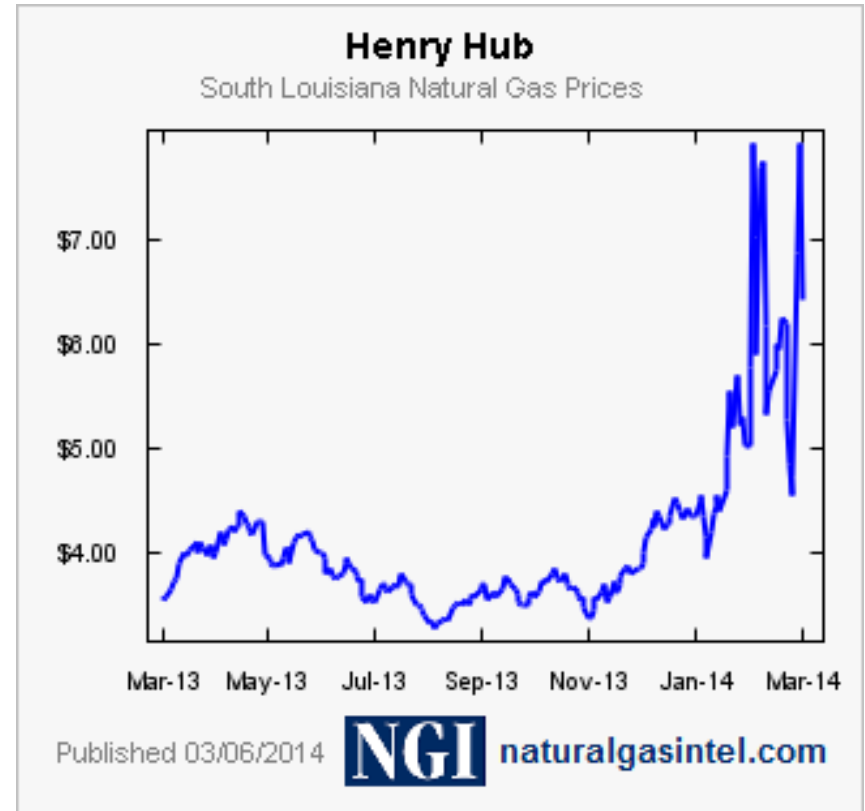
# Ontario Energy Supply Mix Reference Case 2013Q2



# Natural Gas Forecasts



# Dawn vs. Henry Hub





CAD/GJ

# Maximum Traded Daily Prices & Weather (HDD)

HDD

\$100

50

Heating Degree Day Dawn Alberta Delivered to Dawn\* Chicago On-NY Border

*\*NOTE: Delivered using TransCanada interruptible service*

\$80

40

\$60

30

\$40

20

\$20

10

\$0

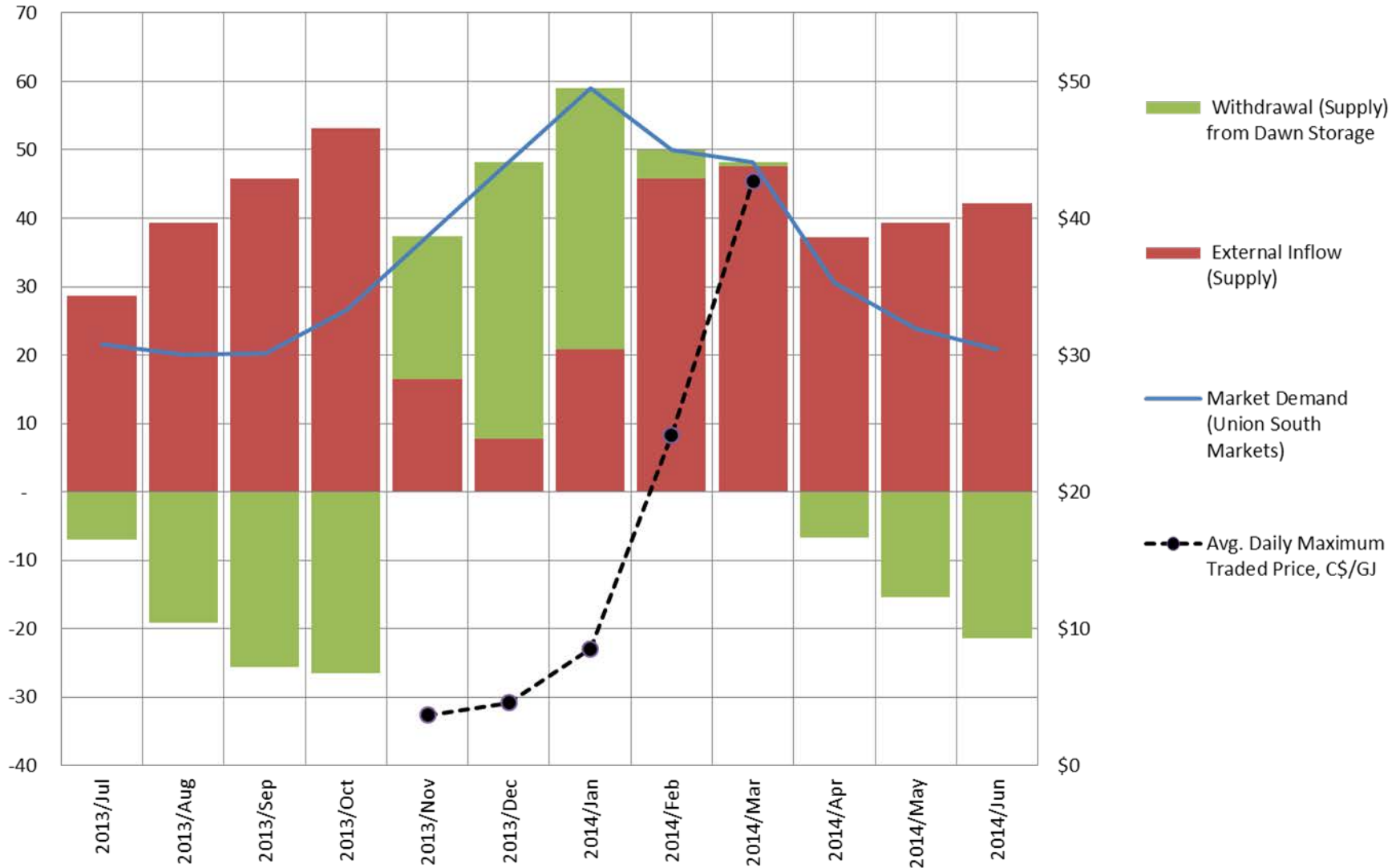
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# Union - Monthly Market Demand, Supply & Price @ Dawn

Demand & Supply, PJ

Price, C\$/GJ

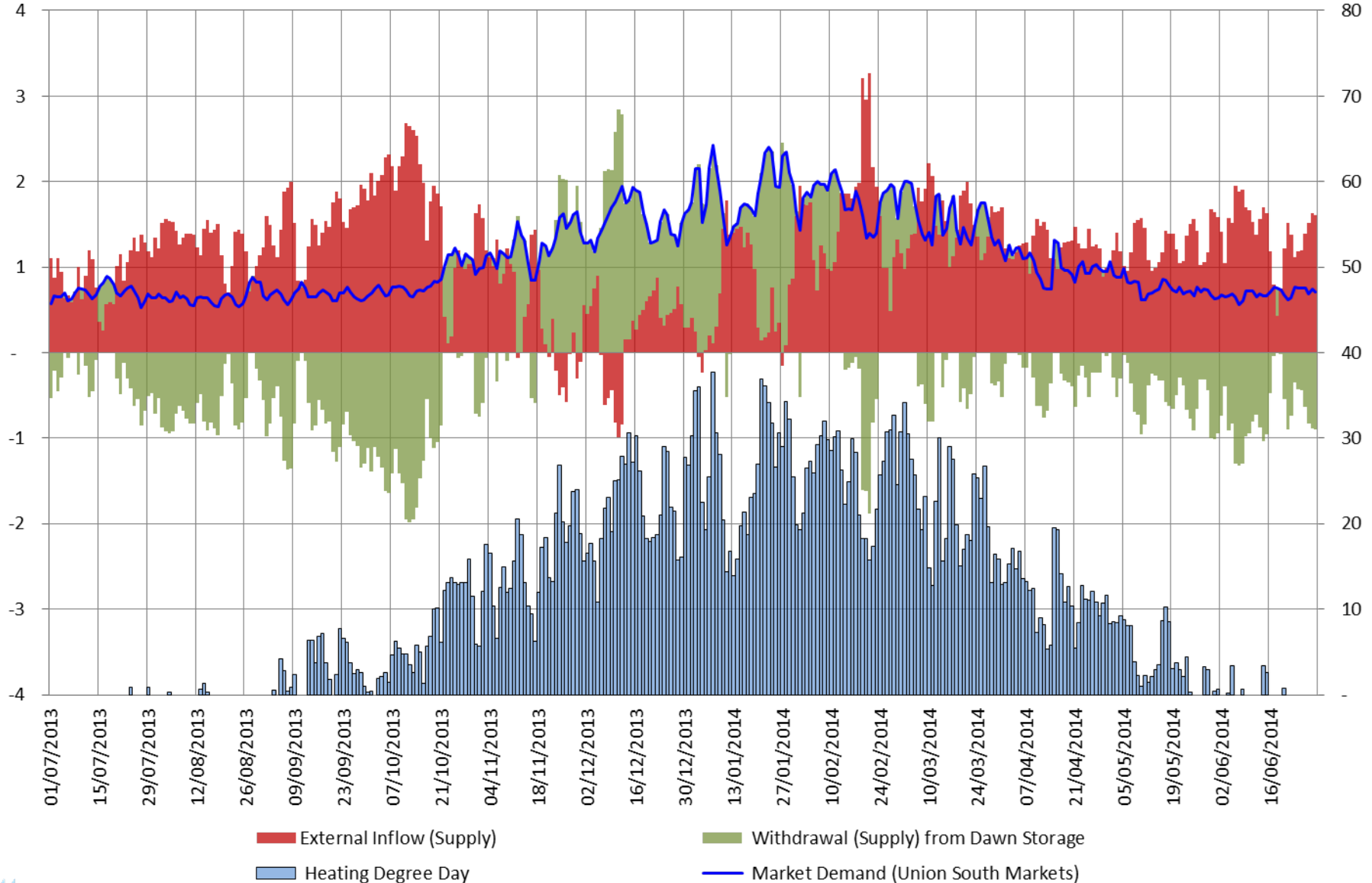


# Union Daily Demand, Supply and Weather (HDD)

## July 2013 to June 2014

Demand & Supply, PJ

HDD

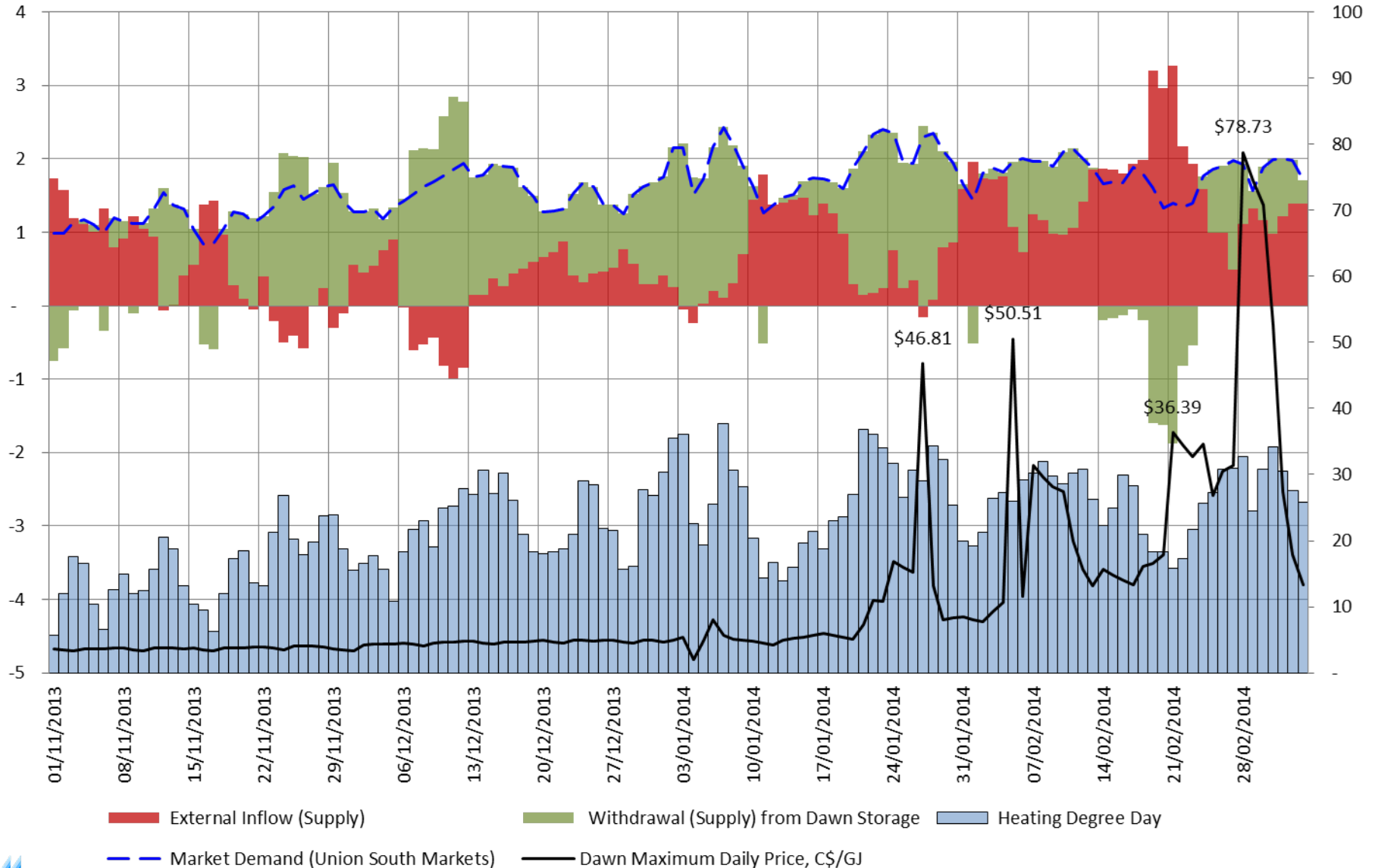




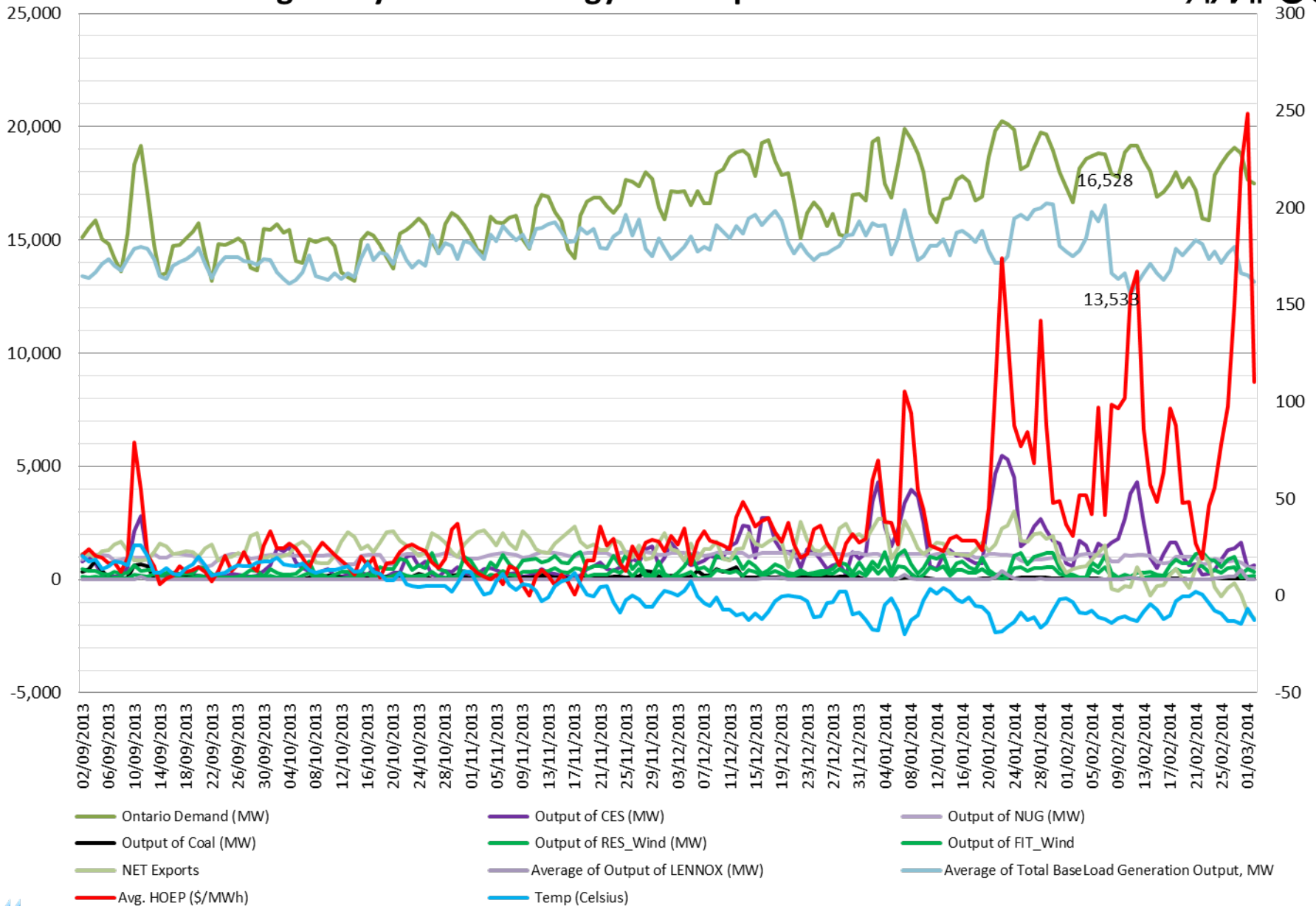
# Union Daily Weather, Demand, Supply and Price @ Dawn November 1 2013 to March 6 2014

Demand & Supply, PJ

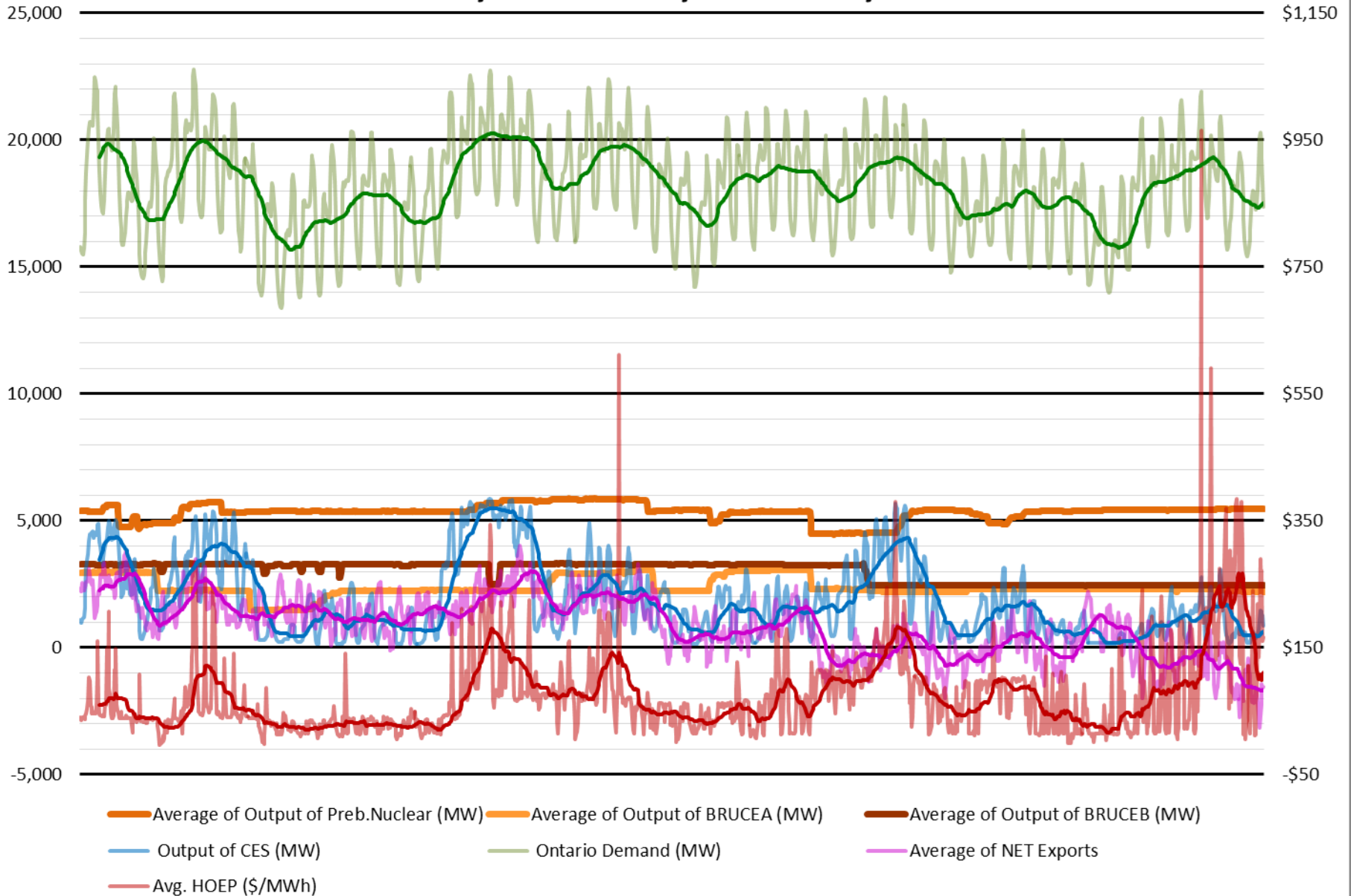
HDD & C\$/GJ



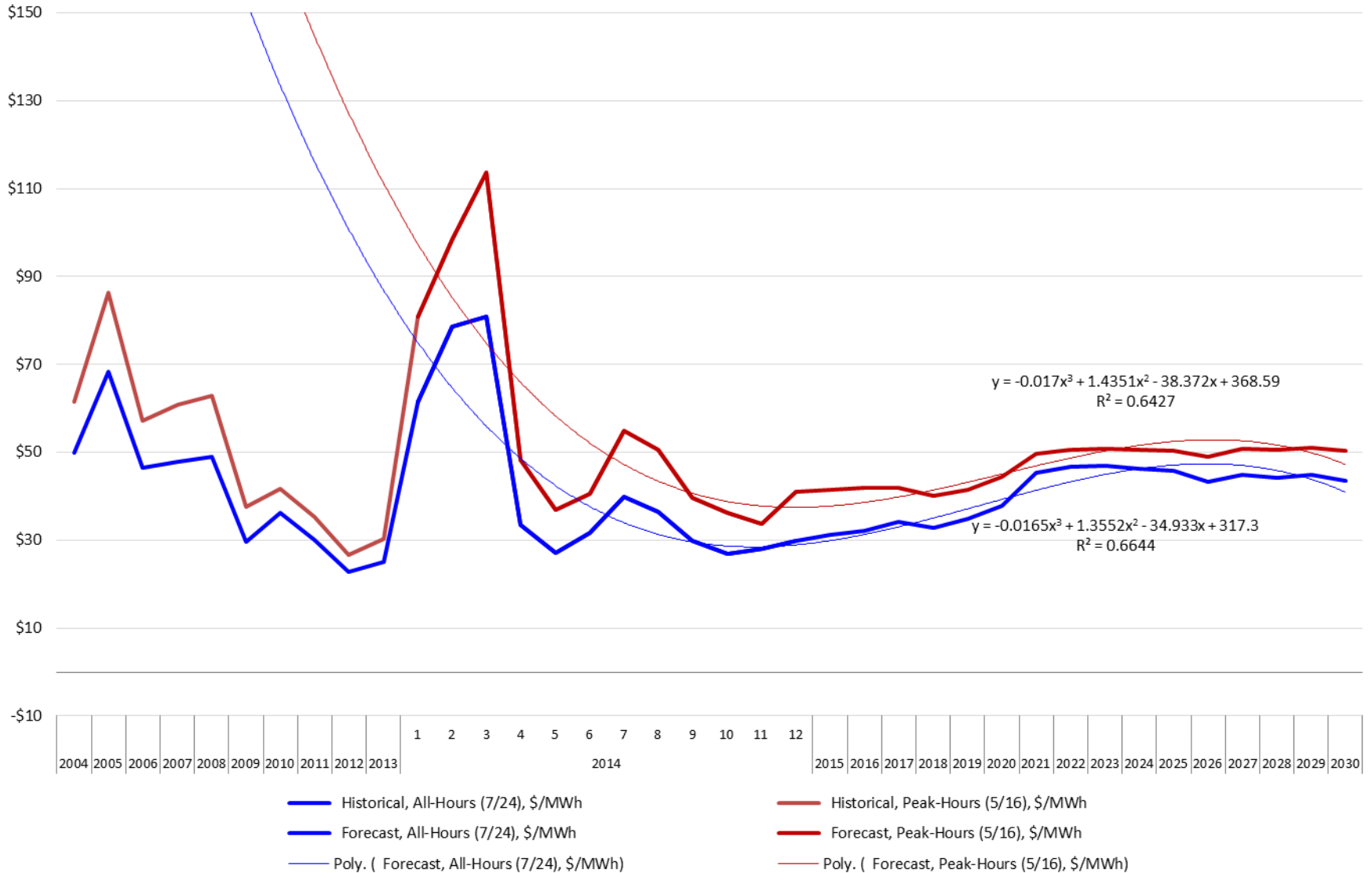
# Average daily Ontario energy data September 2013 - March 2014



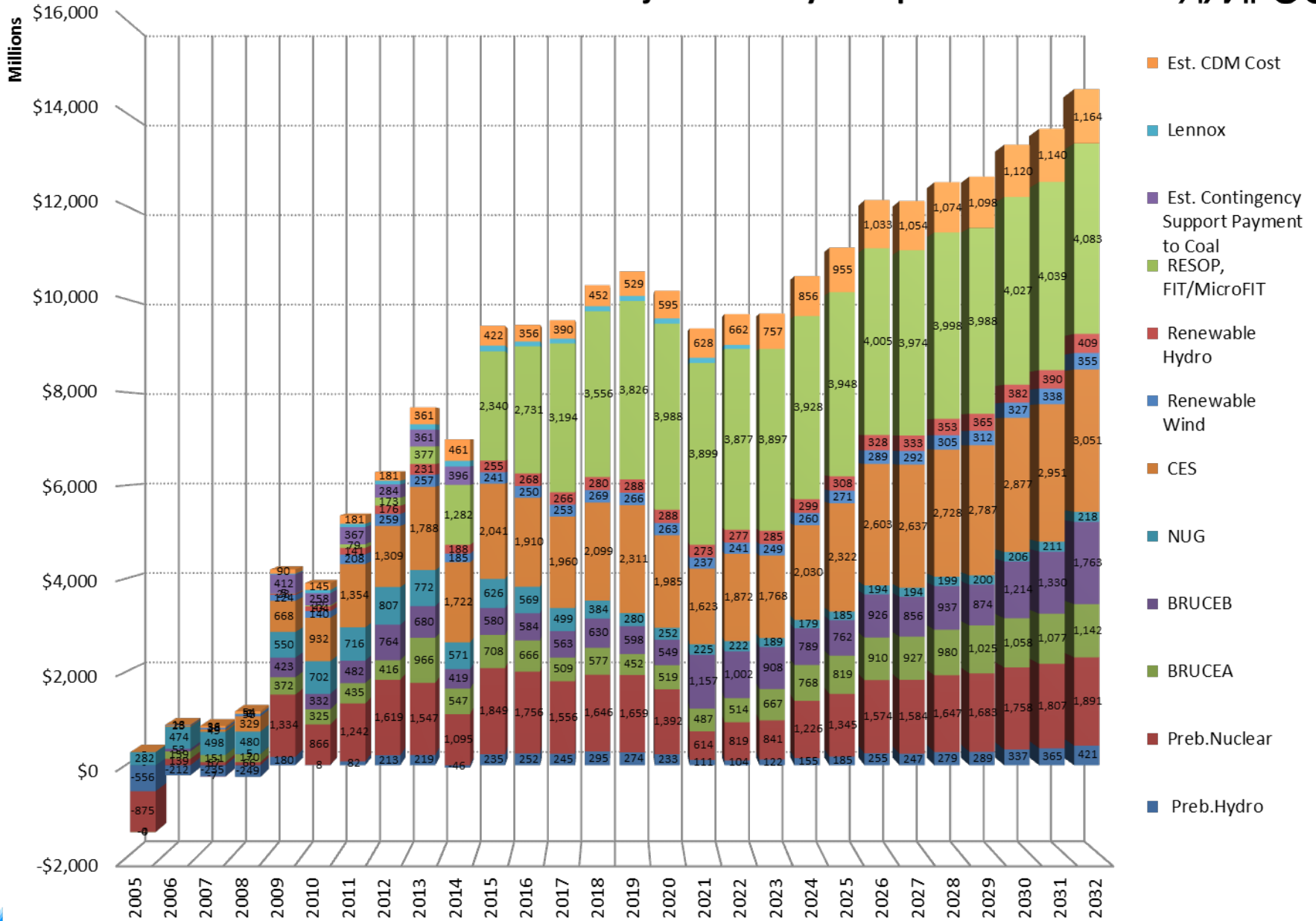
# January and February 2014 hourly data



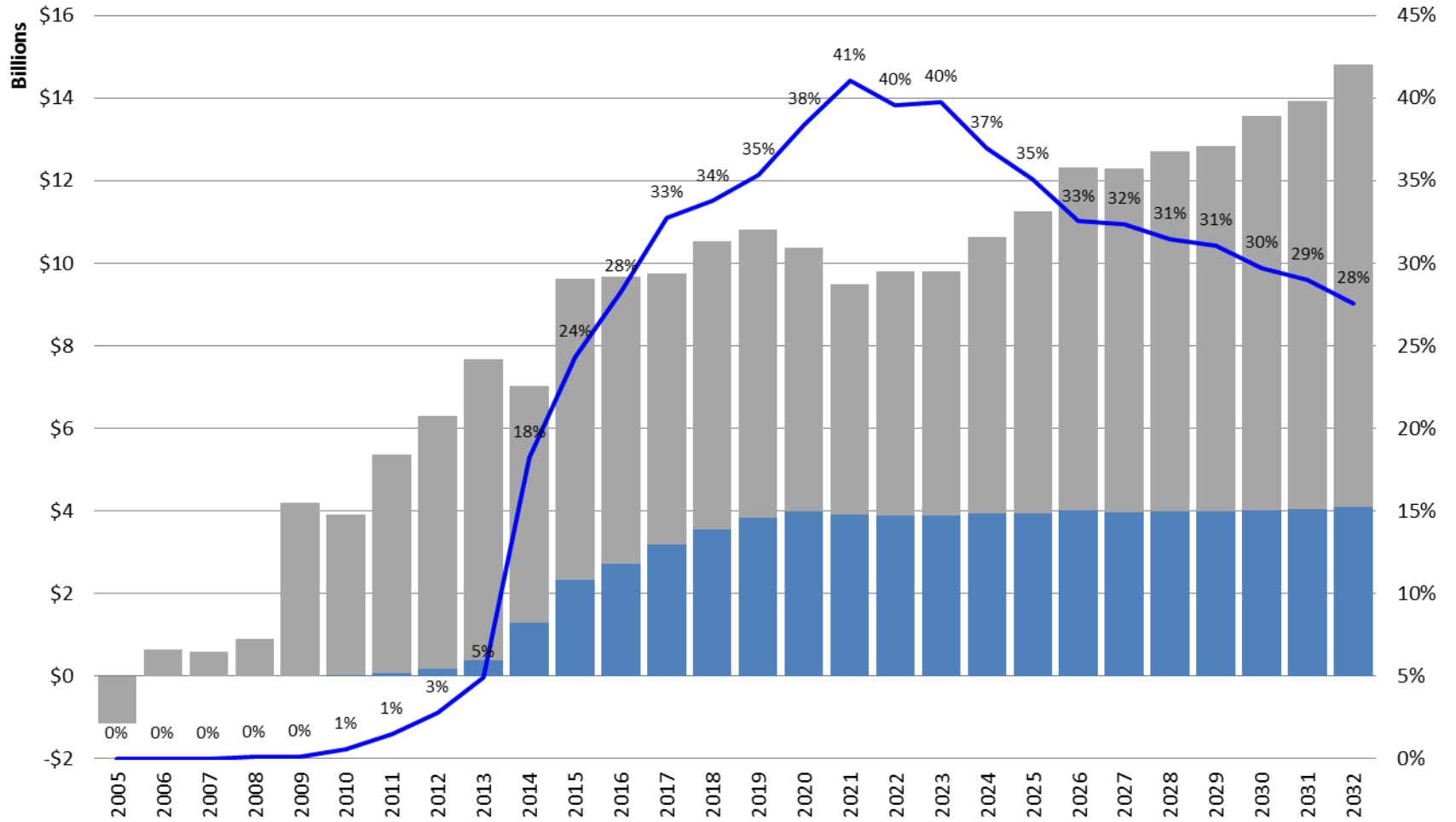
# Monthly Average HOEP, Reference Case, All-Hours vs. Peak-Hours



# Total Annual Global Adjustment by Component

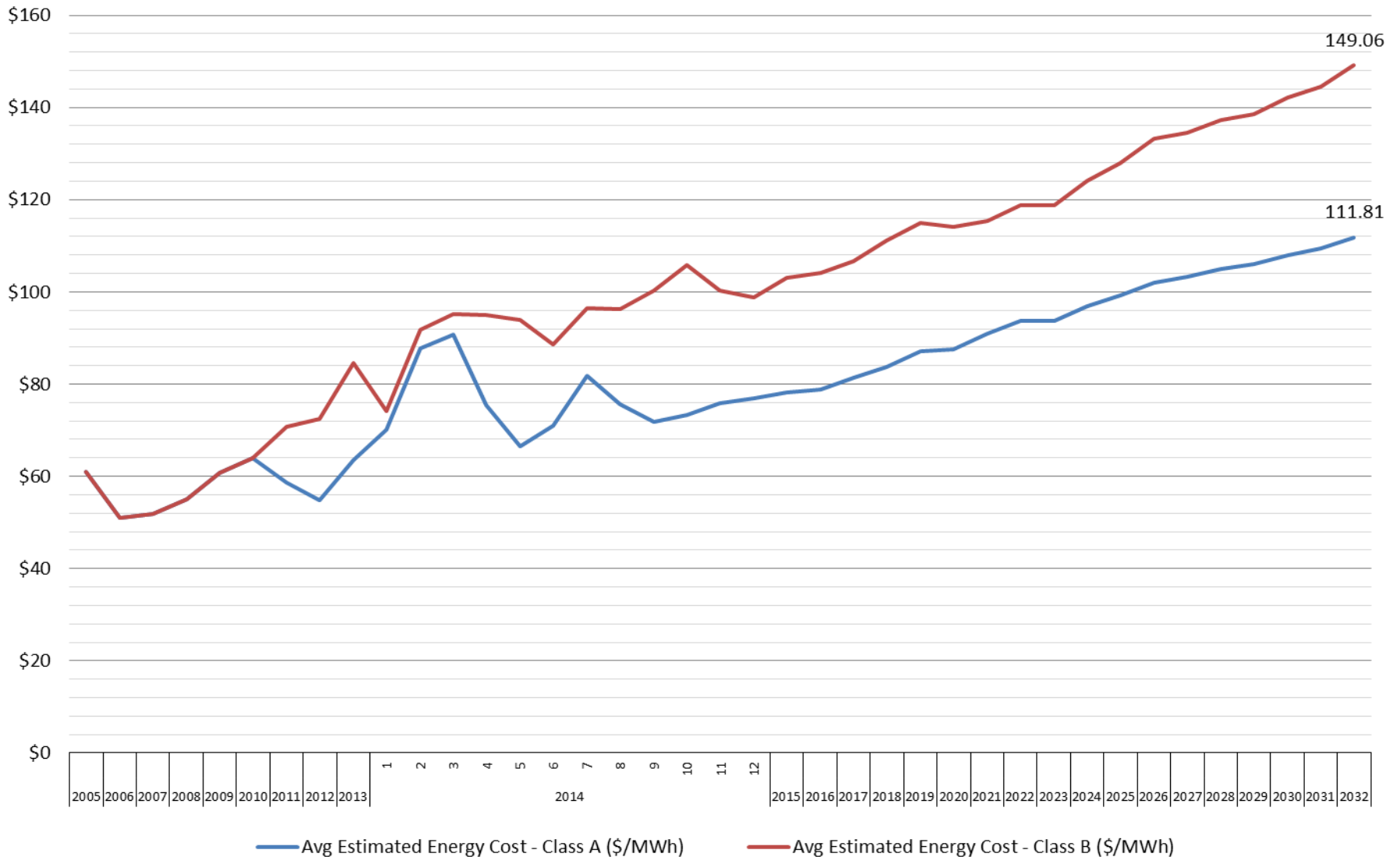


# Global Adjustment Payments for Renewable Energy



GA Paid to All the Other Generation Assets Subject to the Global Adjustment (\$)
   
 GA Paid to RESOP, FIT & MicroFIT Contracts (\$)
   
 RESOP/FIT Porportion

## Average Annual Energy Cost (Nominal HOEP plus Global Adjustment per MWh)



# AMPCO members



## Industrial power consumers in Ontario

- Resource-based, energy-intensive, value-added
- Export-oriented, trade-exposed
- Forestry, chemical, mining and minerals, steel, petroleum products, cement, automotive, industrial gases, manufacturing

## Leaders in energy management

- 18.5 terawatt-hours per year
  - 15% of annual Ontario energy consumption
- 2100 megawatts average demand
  - 10% of Ontario demand during system peaks
  - 1000 MW demand reduction on peak
- Electricity expenditures >\$1.5 billion/a

## Leaders in conservation

- Dispatchable Load
- Demand Response
- Industrial Accelerator

- Air Liquide
- Air Products Canada
- Arcelor Mittal Dofasco
- Atlantic Packaging Products
- Atlas Tube
- Cascades
- Canadian Gypsum Corporation
- CF Industries
- Enbridge Pipelines
- Essar Steel
- Essroc Canada
- Ford Motor
- Gerdau
- Goldcorp
- Goodyear
- Hamilton Specialty Bar
- Holcim Canada
- Imperial Oil
- INVISTA Canada
- Irving Tissue
- Ivaco Rolling Mills
- Kimberly-Clark Inc
- Lafarge Canada
- Lanxess
- MRRM Inc. – Dainty Foods Division
- NOVA Chemicals
- Novelis Specialty
- Pan Abrasive
- Praxair
- Resolute Forest Product
- Saint-Gobain Ceramics
- Shell Canada
- Sifto Canada
- St. Marys Cement
- Sudbury Integrated Nickel Operations
- Suncor Energy
- Tembec
- The Canadian Salt Company
- US Steel
- Vale
- Washington Mills Electro Minerals
- Wescast Industries