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SEPTEMBER 2014

EOEG MARKET SUMMARY
FORO PEMEX PETROQUÍMICA 2014

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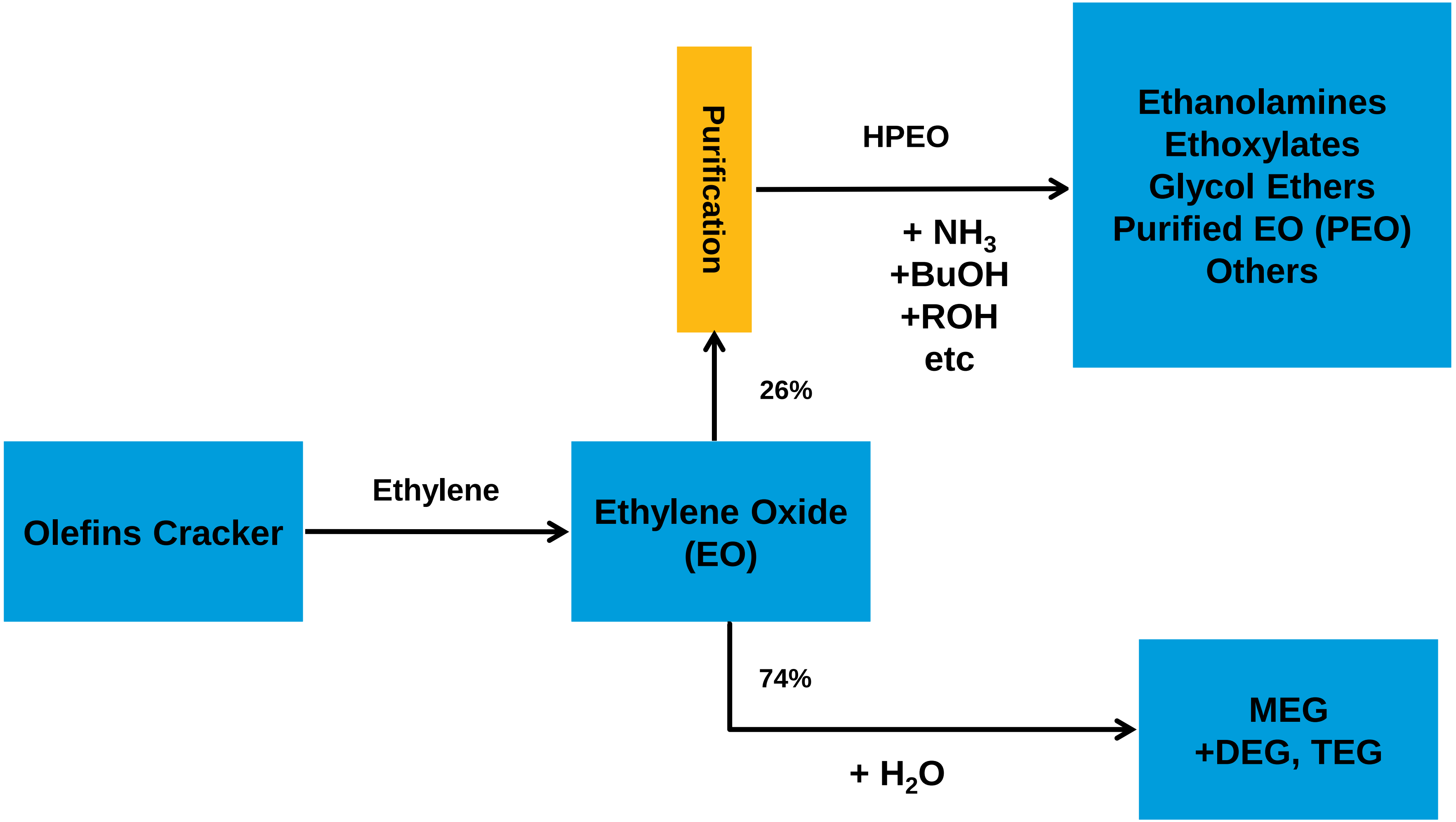
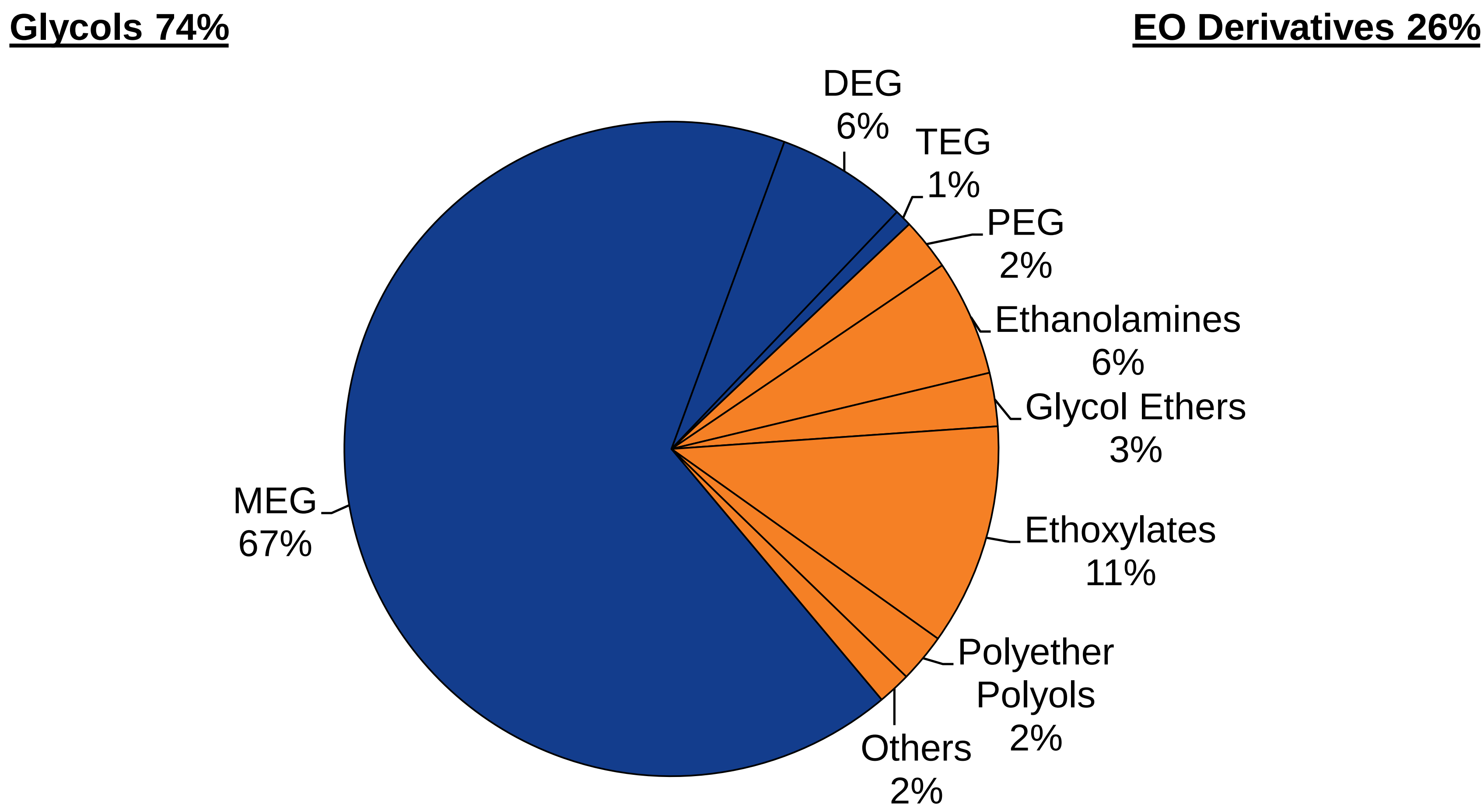
EO Family Snapshot - 2014

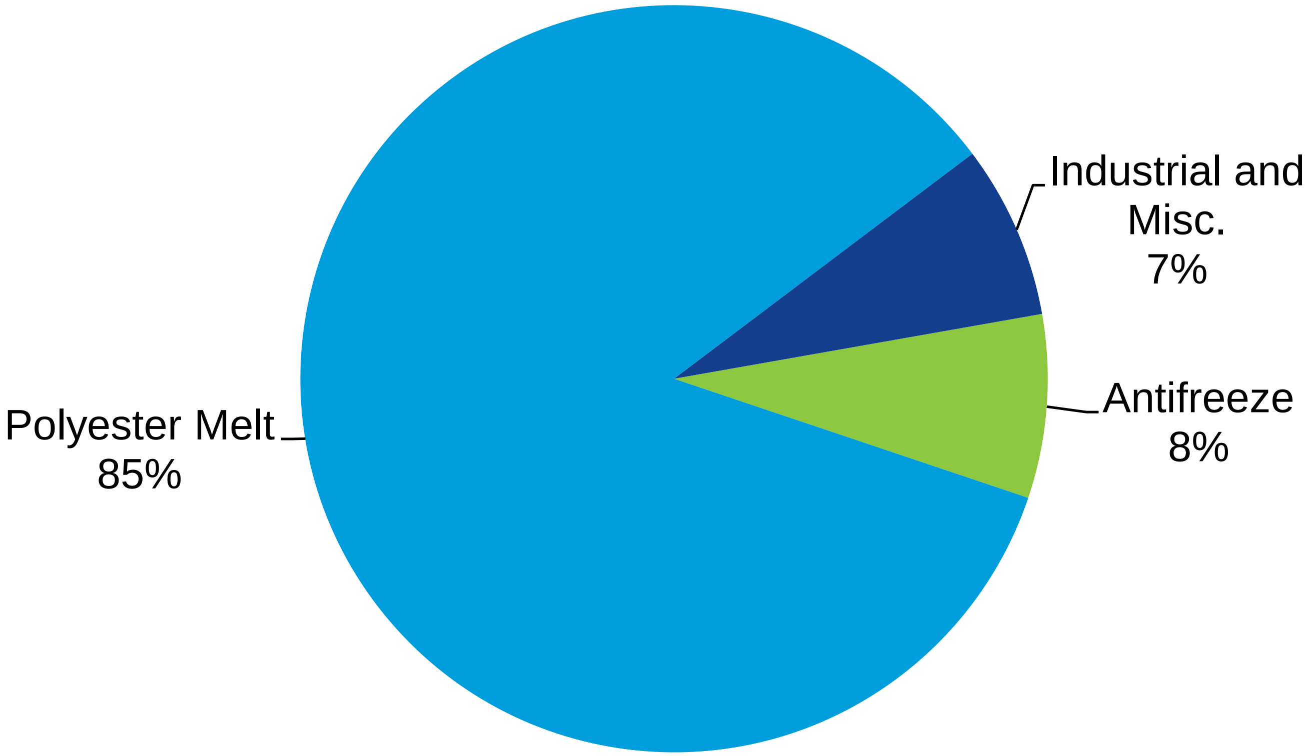


MEG Dominates EO Demand



2014 Demand = 25.4 Million Metric Tons

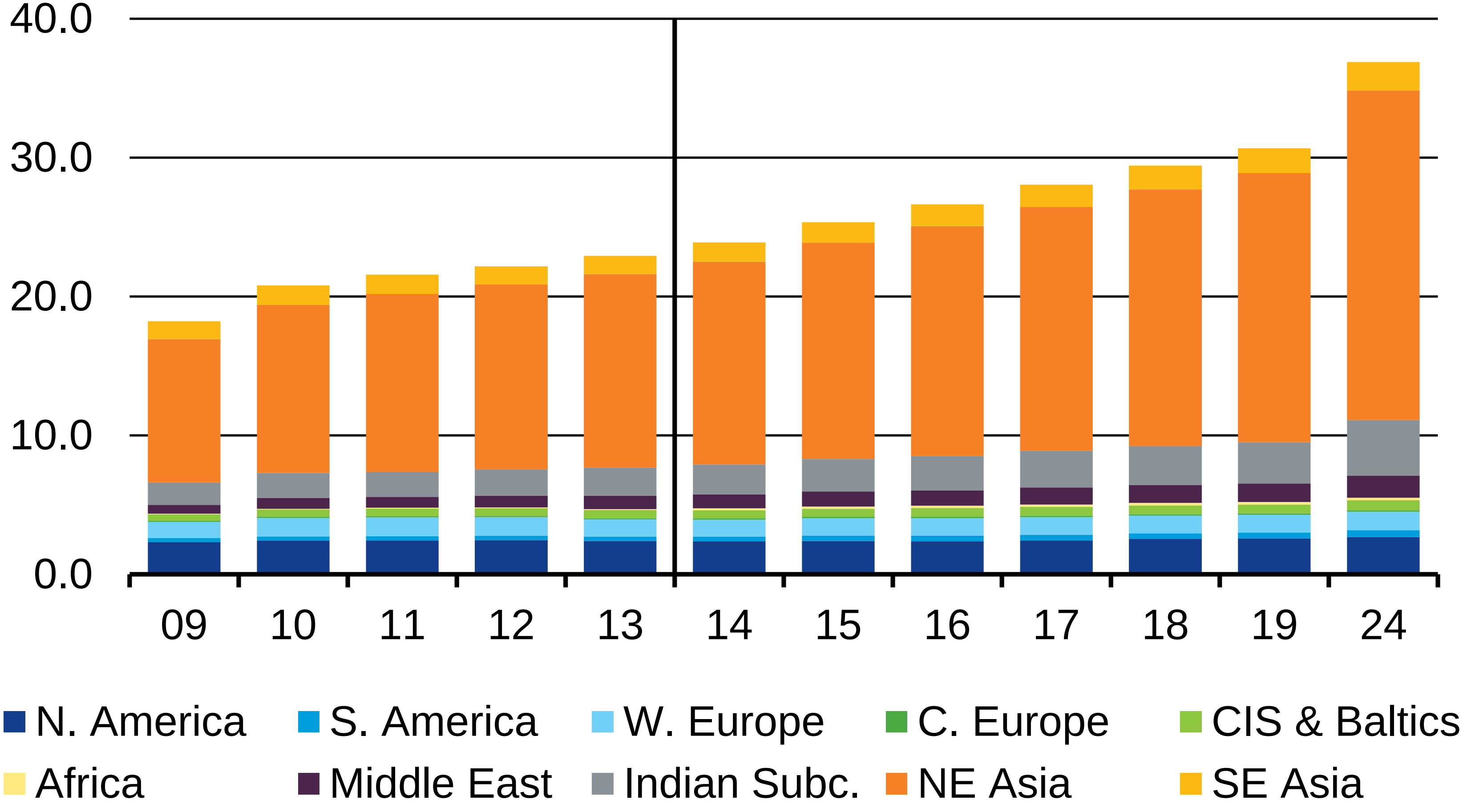
Polyester Condensation Dominates World MEG Demand



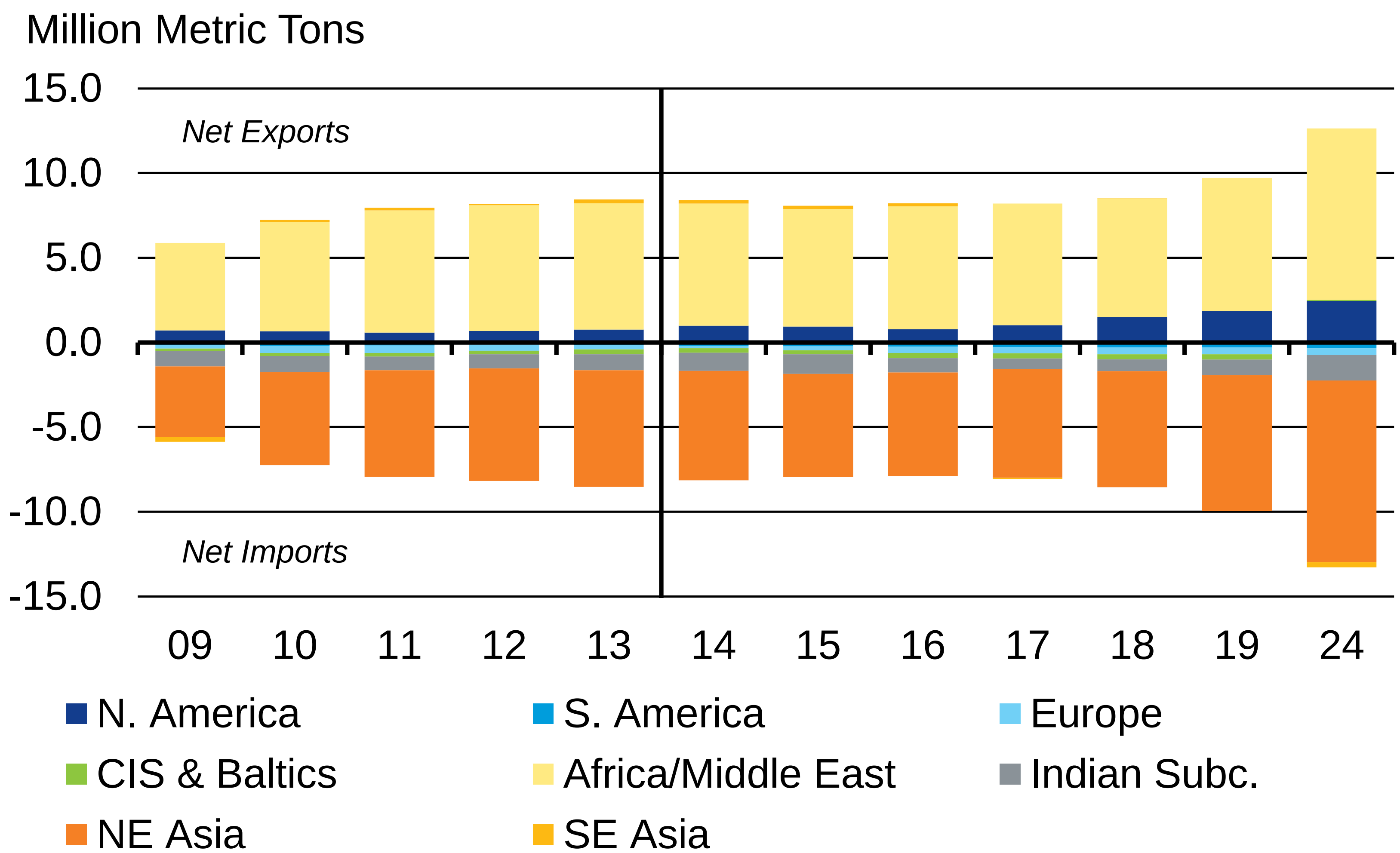
2014 Demand = 23.1 Million Metric Tons

China Dominates Polyester Production & MEG Demand Today & Will For Many Years To Come

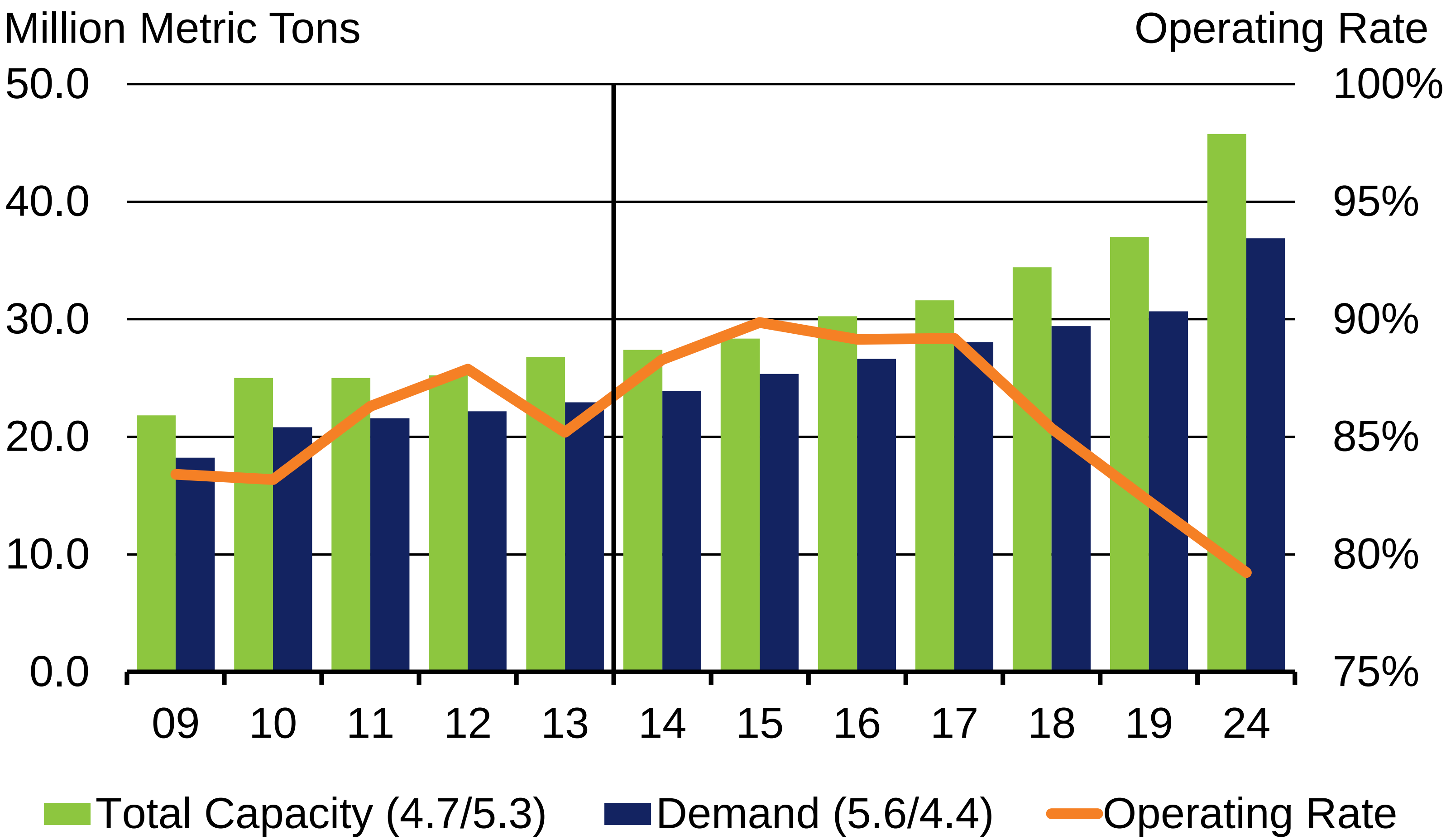
MEG Regional Demand, Million Metric Tons



Global MEG Trade Is Critical Part of Balancing Supply & Demand

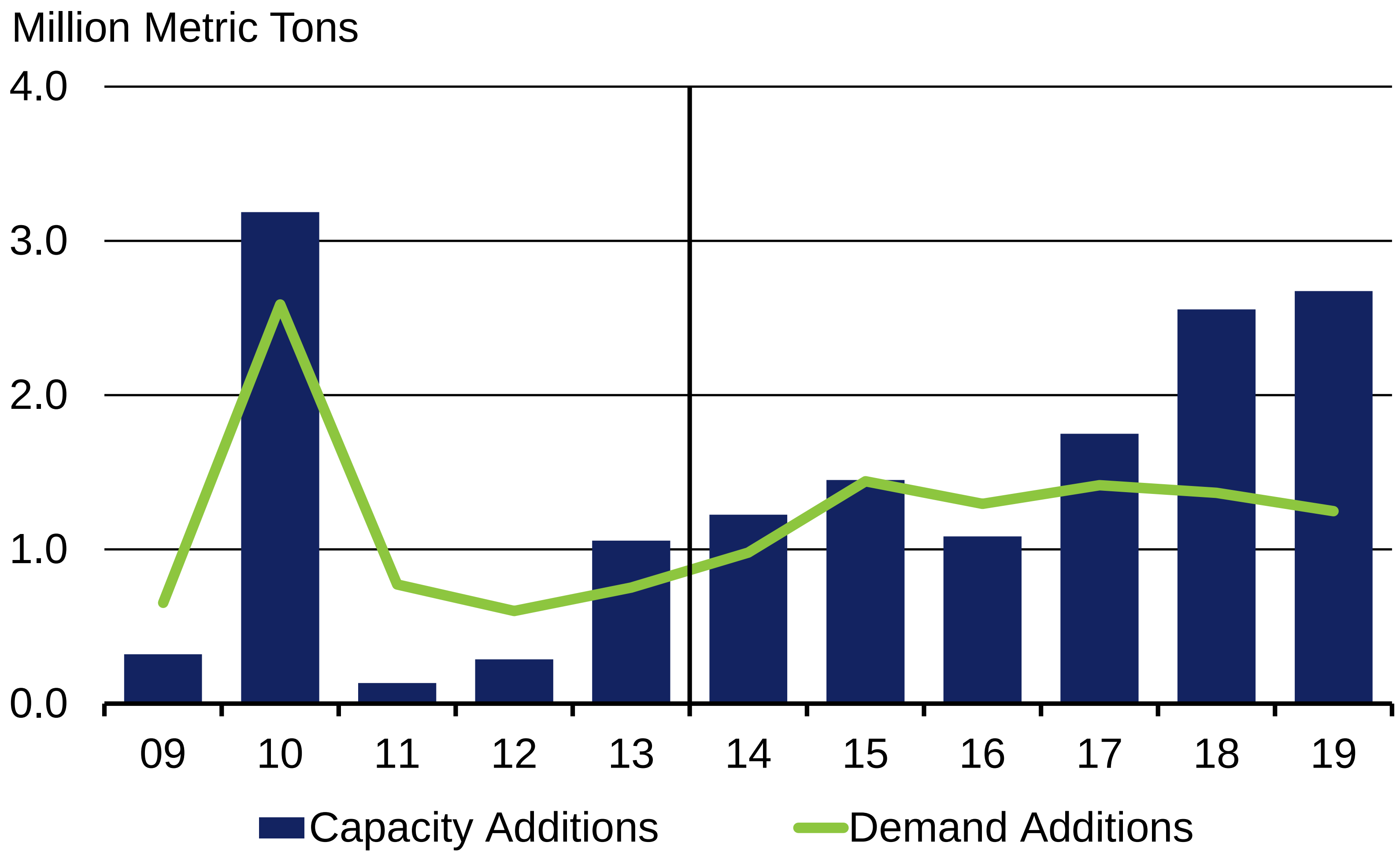


Global MEG Supply-Demand Summary

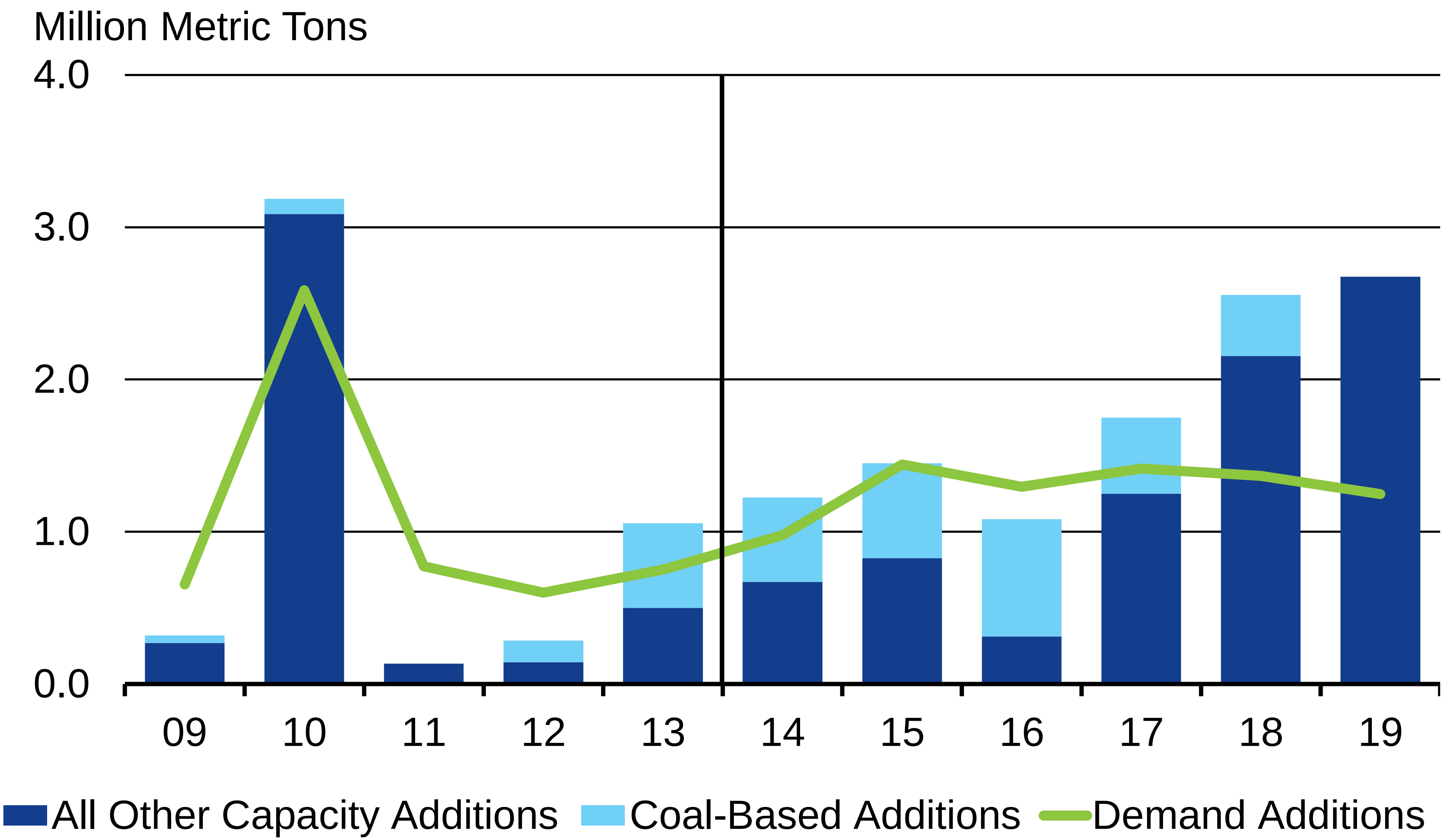


(% AAGR = 09-14/14-24)

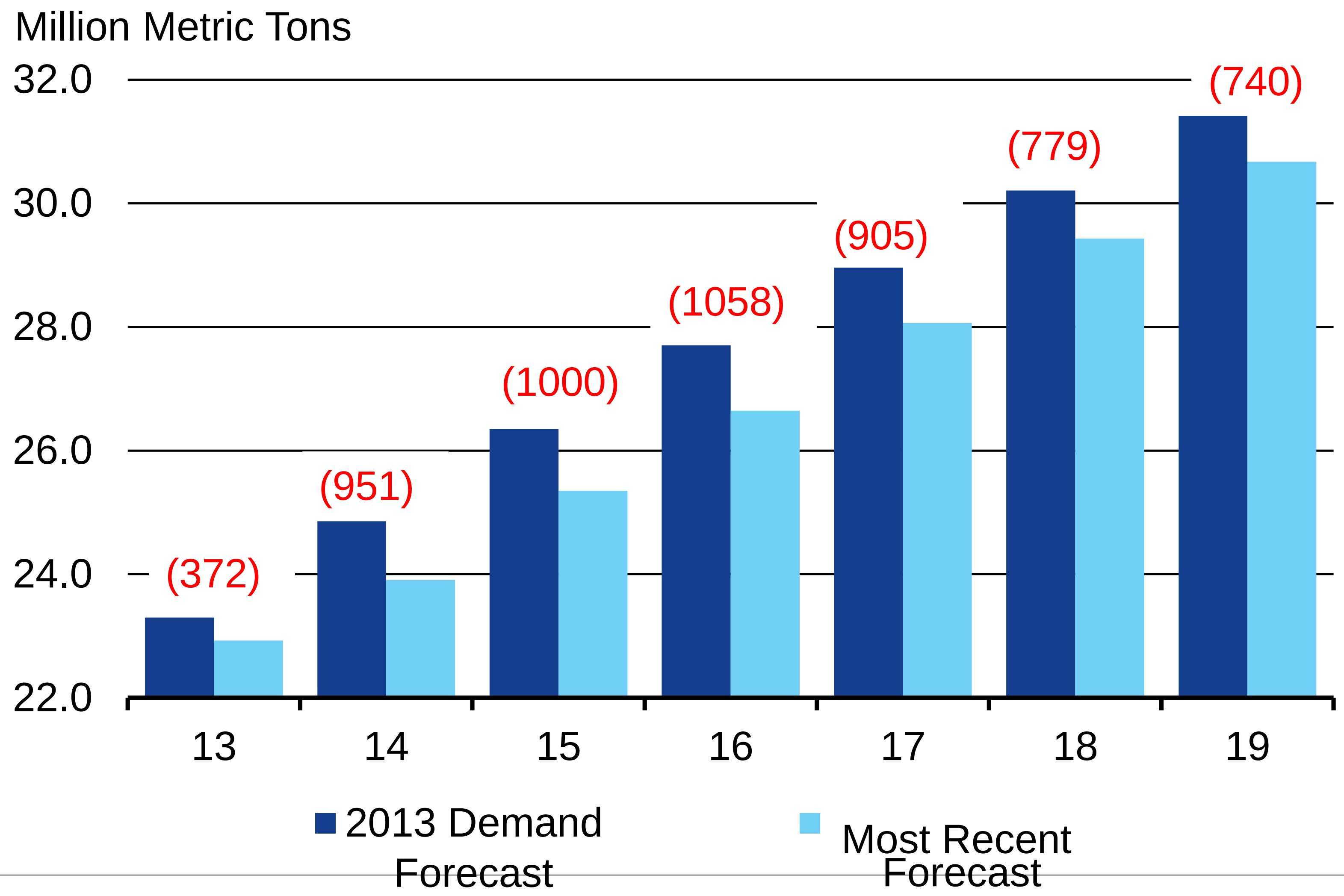
Year-on-Year Changes – MEG Capacity & Demand



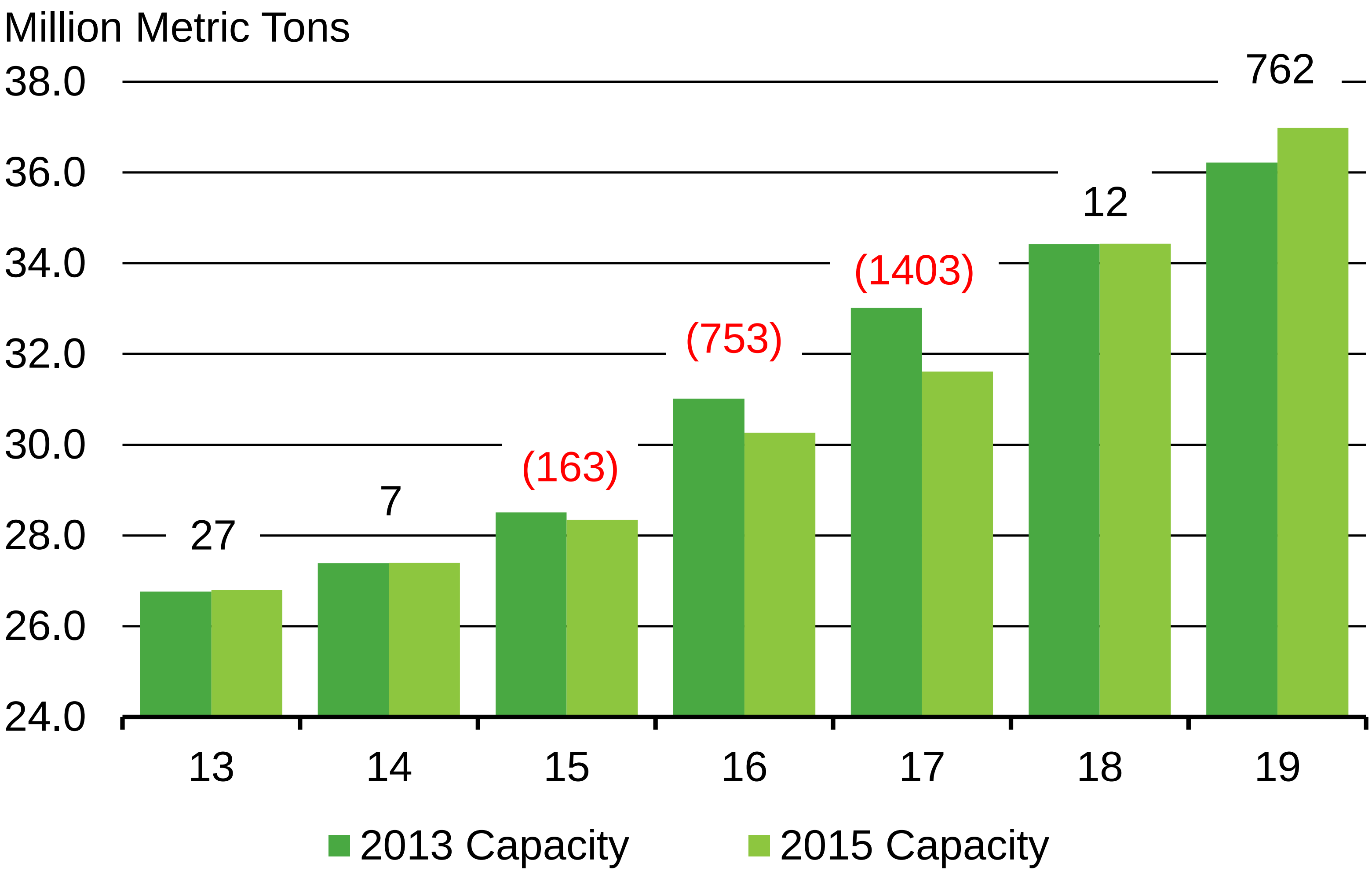
Year-on-Year Additions:
MEG Capacity and Demand



Why is MEG Price So Low?
What's Changed: MEG Demand



Why Is The MEG Cycle Peak Extended to 2017?
What's Changed: MEG Capacity



Other Key Assumptions and Variables

Saudi Operations issues

- Multiple extended (10-12 week), sequential shutdowns in 2014 – 2015 for reactor replacements
- Rumored to be running at reduced rates at 5 units, very high rates at the rest to fill the gap
- They have managed the situation effectively to date
- We assume 400-600 Kta lost production in both 2014 and 2015, plus increased risk of unplanned production losses

China Coal-Based MEG Quality

- DMO process - assume technical solution and acceptance
- 1.5 million tons capacity runs at 40-50% in 2014-2015
- 3.7 million tons capacity operating at 70% by 2018 and beyond

Who Will Build New EO-EG Capacity?
High Probability

- Huntsman – Port Neches, TX
  - Re-purposing a PD Glycols reactor
  - 160 kta MEG + DEG in 2015 (no HPEO)
- Shell – Geismar, LA; Qatar; Singapore
  - Not official; probable 200/275 kta EO/MEG 2017 at Geismar
  - Announced 2 X 700kta MEG (OMEGA) Qatar 2018 – 2019
  - Converting EGS Singapore to all-HPEO
- Sasol – Lake Charles, LA
  - Back-integration for ethoxylates; Engineering underway
  - Estimate 100kta HPEO, 300kta MEG 2018
- Ineos - Battleground, TX
  - Probably MEG only, HPEO “maybe later”
  - Delayed from 2015 original forecast; 2018 possible (?)

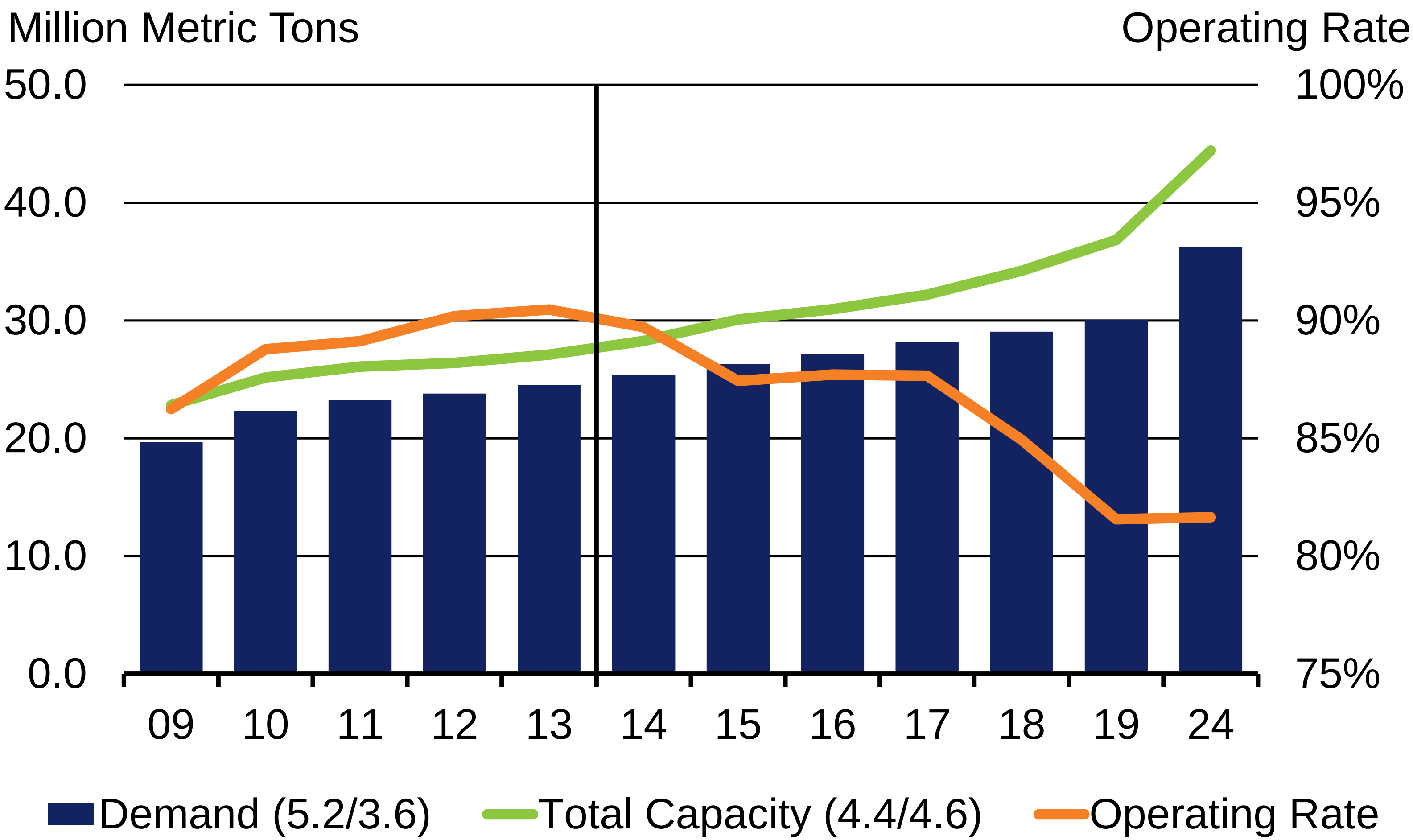
Who Will Build New EO-EG Capacity?
Possibly

- Formosa Plastics Corp – TX or LA?
  - Have announced 2 new crackers, nothing official on EOEG
  - Low cost MEG for their global polyester business

- MEGlobal (Dow & PIC) – Freeport or Kuwait?
  - MEG is their first name
  - Need new capacity to retain strategic relevance

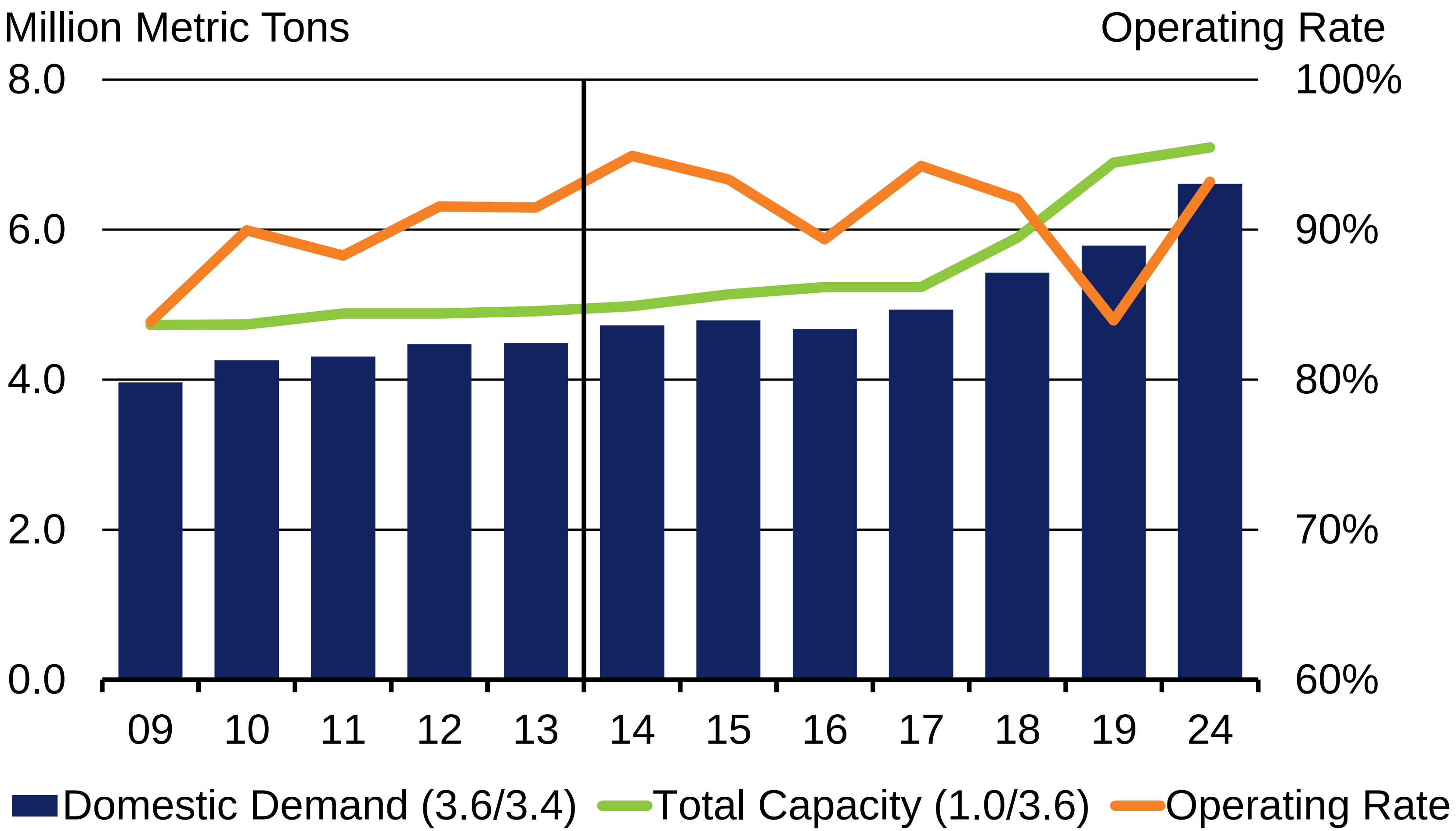
- Axiall/Lotte JV – Louisiana 2018?
  - Recent JV announcement, exploratory effort
  - Not obvious partnership, but some synergy
- Alpek – Mexico 2018?
  - Probably mostly or all glycols

Global EO Supply-Demand Summary



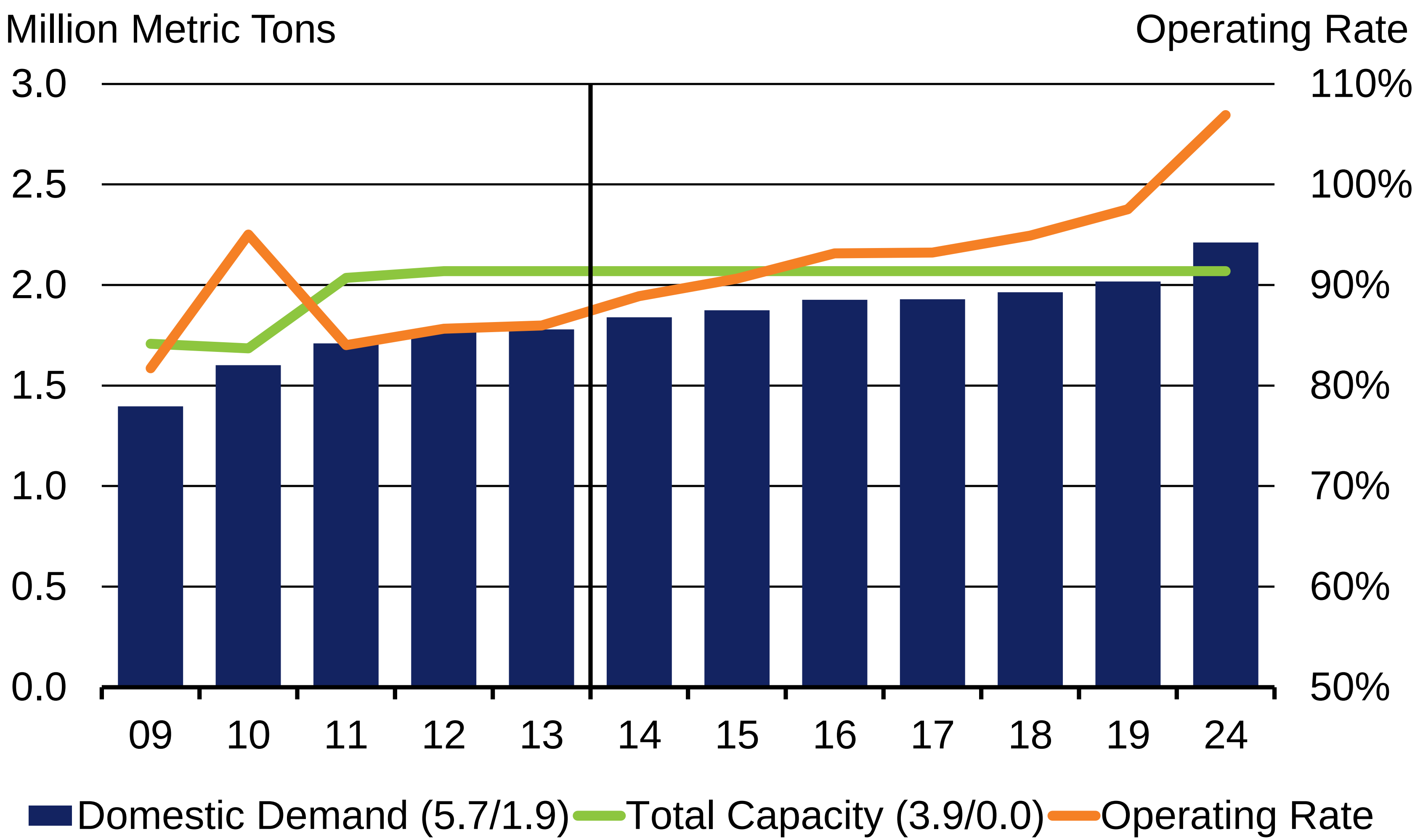
(% AAGR = 09-14/14-24)

North America EO Supply-Demand Summary



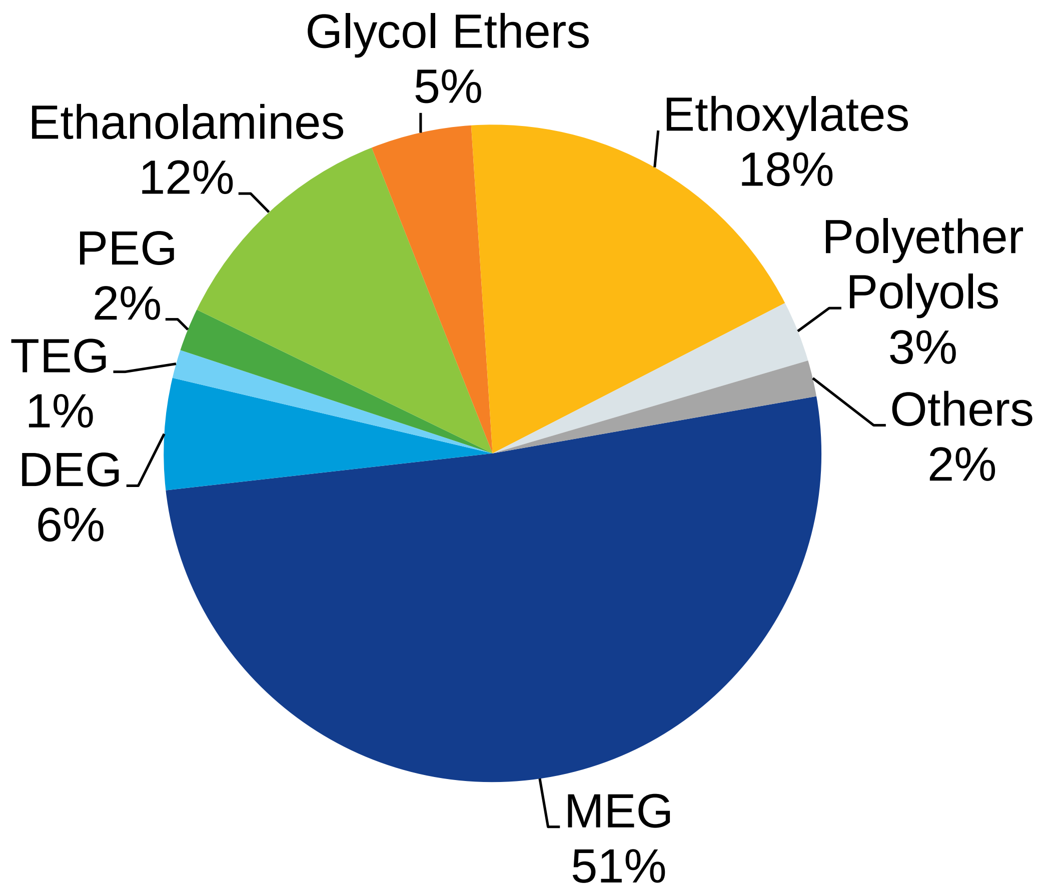
(% AAGR = 09-14/14-24)

US HPEO Supply-Demand Summary



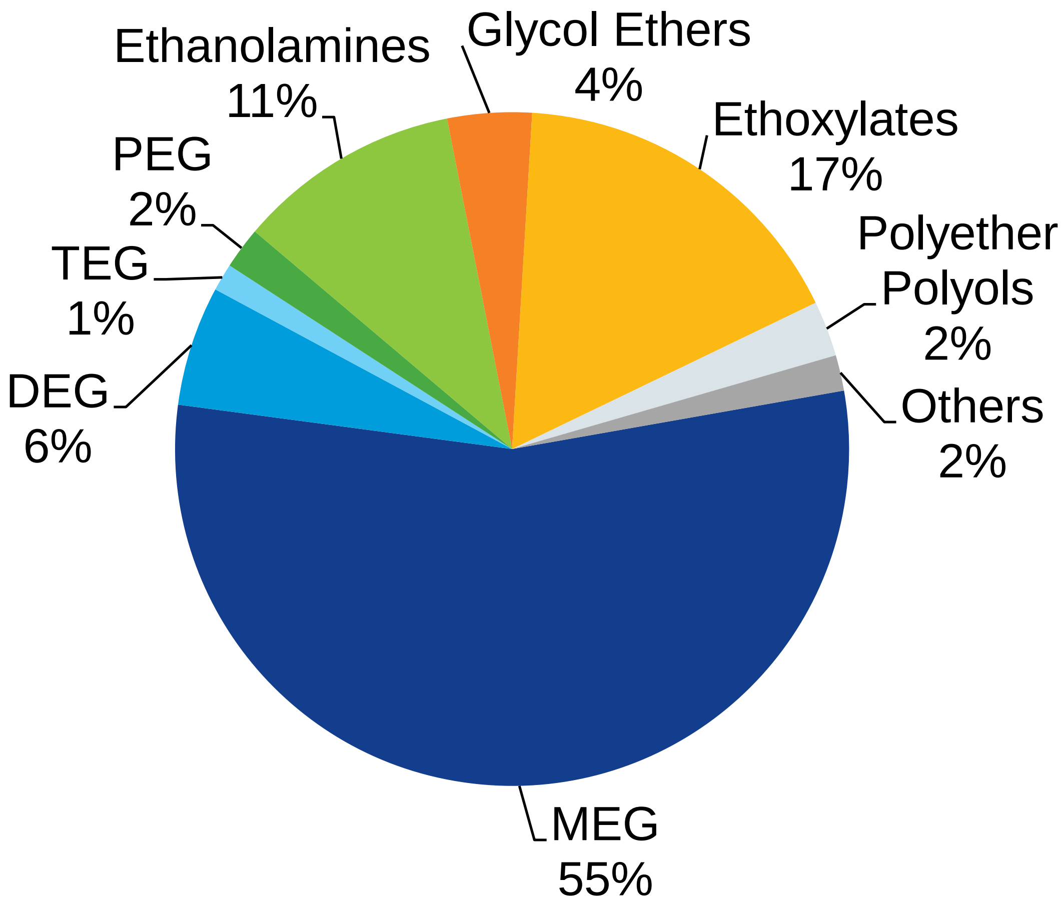
(% AAGR = 09-14/14-24)

North America EO Demand 2014



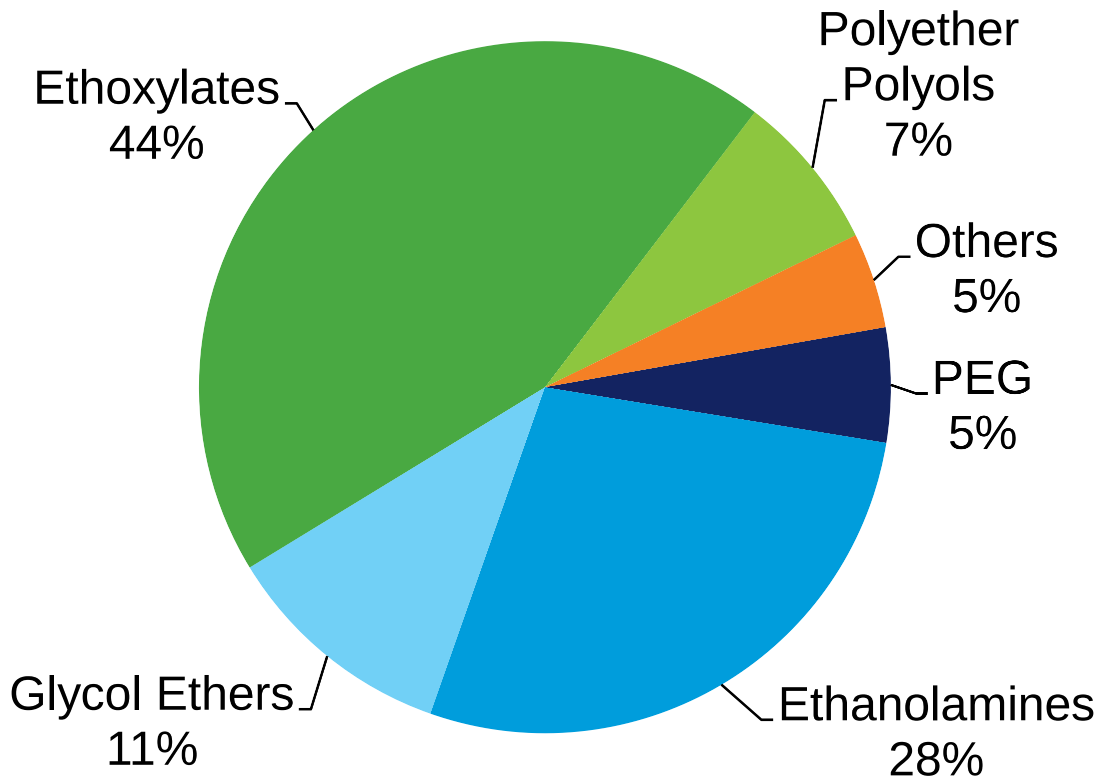
Domestic Demand = 4.7 Million Metric Tons

North America EO Demand 2019 – Including Hypothetical



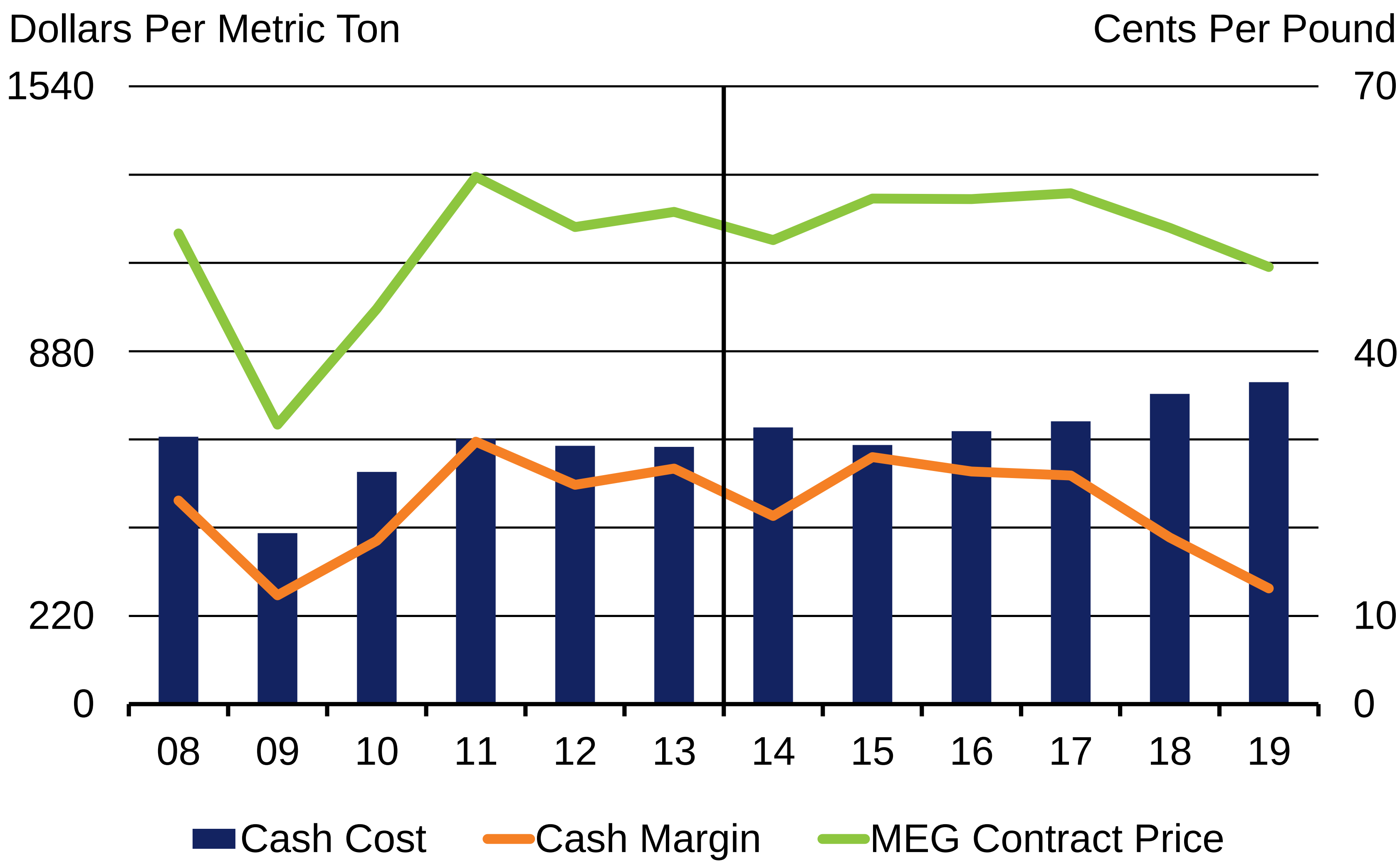
Domestic Demand = 5.8 Million Metric Tons

North American 2019 HPEO Demand Breakdown

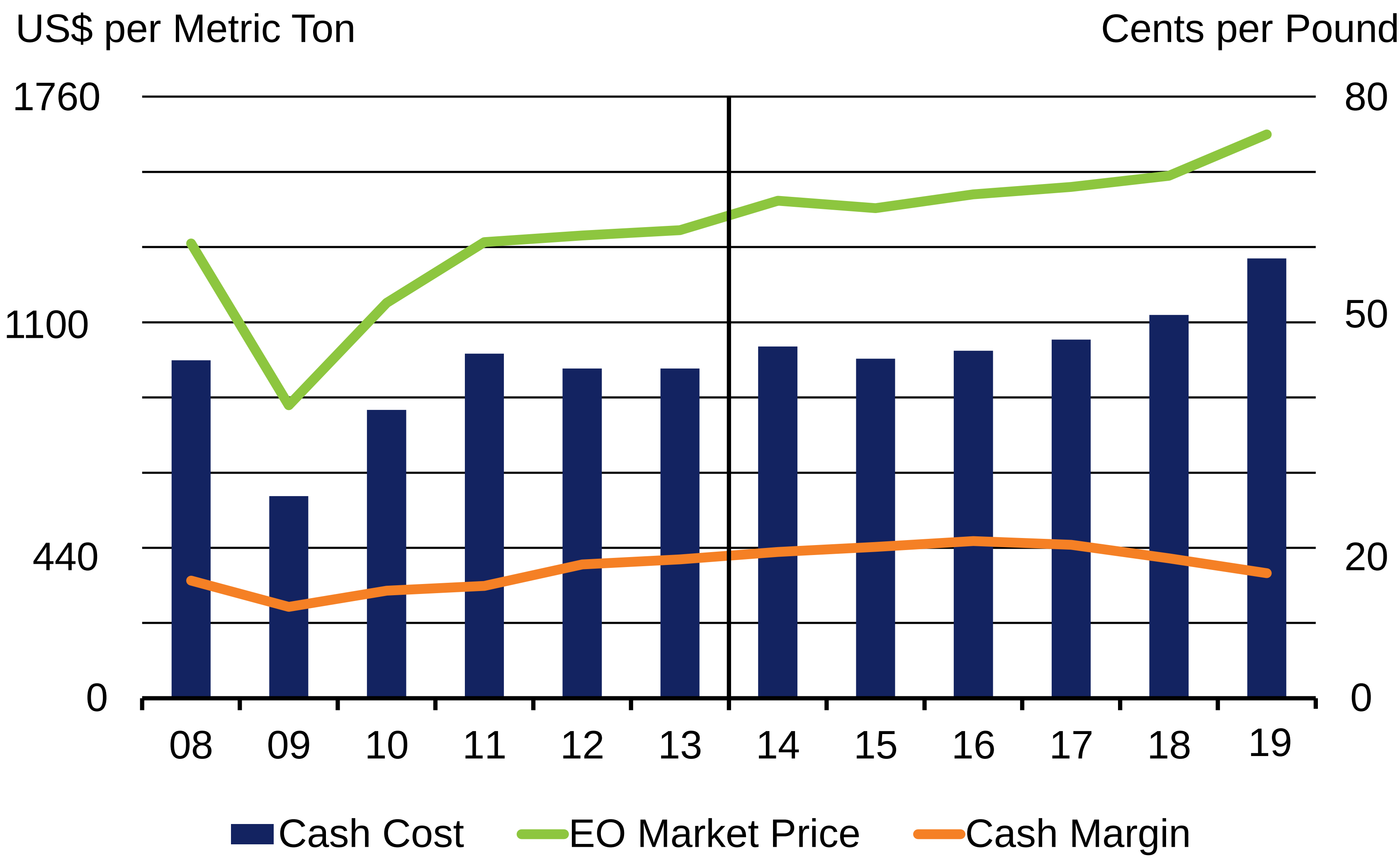


Domestic Demand = 2.0 Million Metric Tons

North American MEG Prices, Margins



North American HPEO Prices, Margins



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THANK YOU!

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