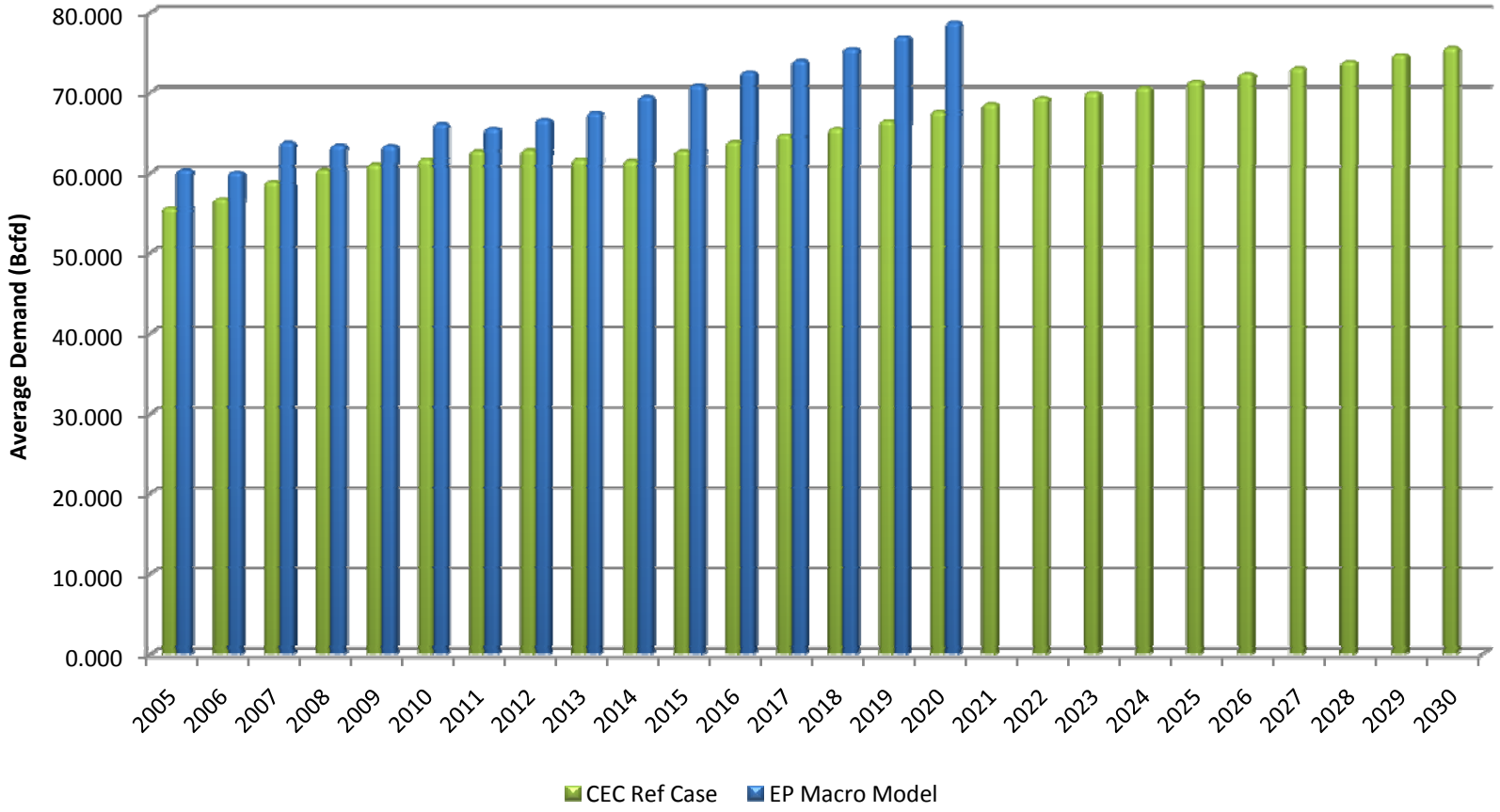
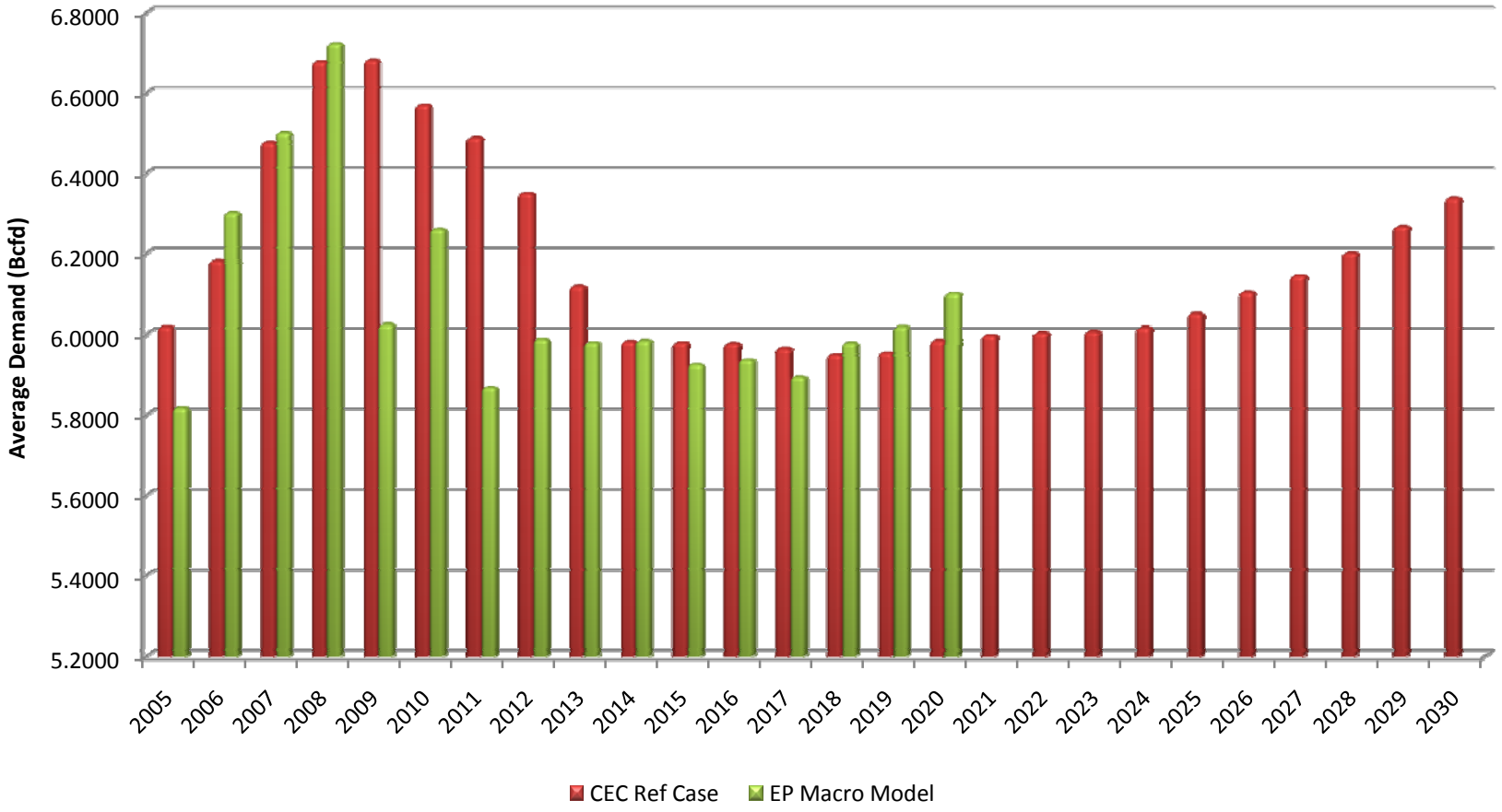
CEC Workshop
El Paso Macro Model Comparisons
9-26-11

Total US Natural Gas Demand



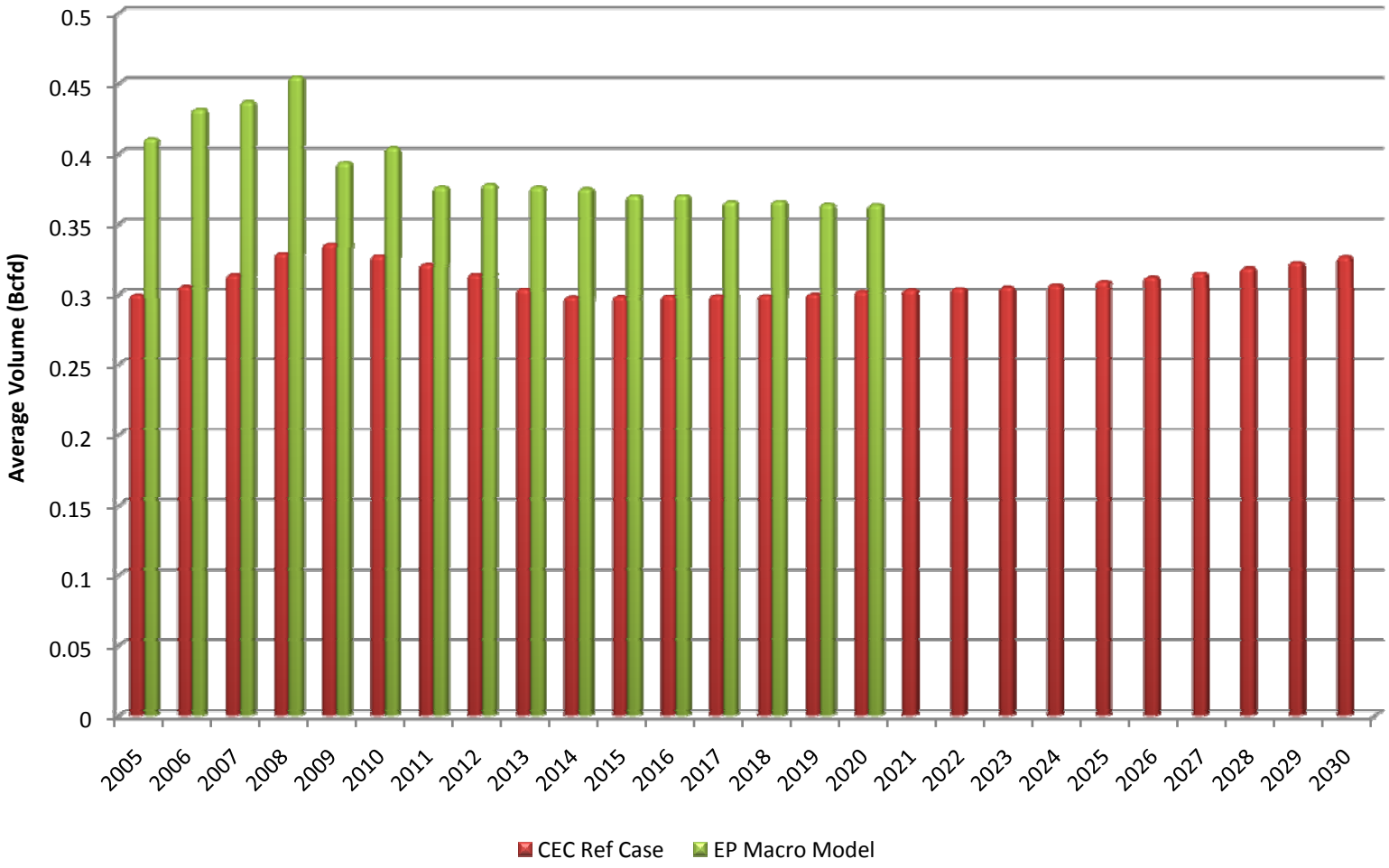
Total California Demand



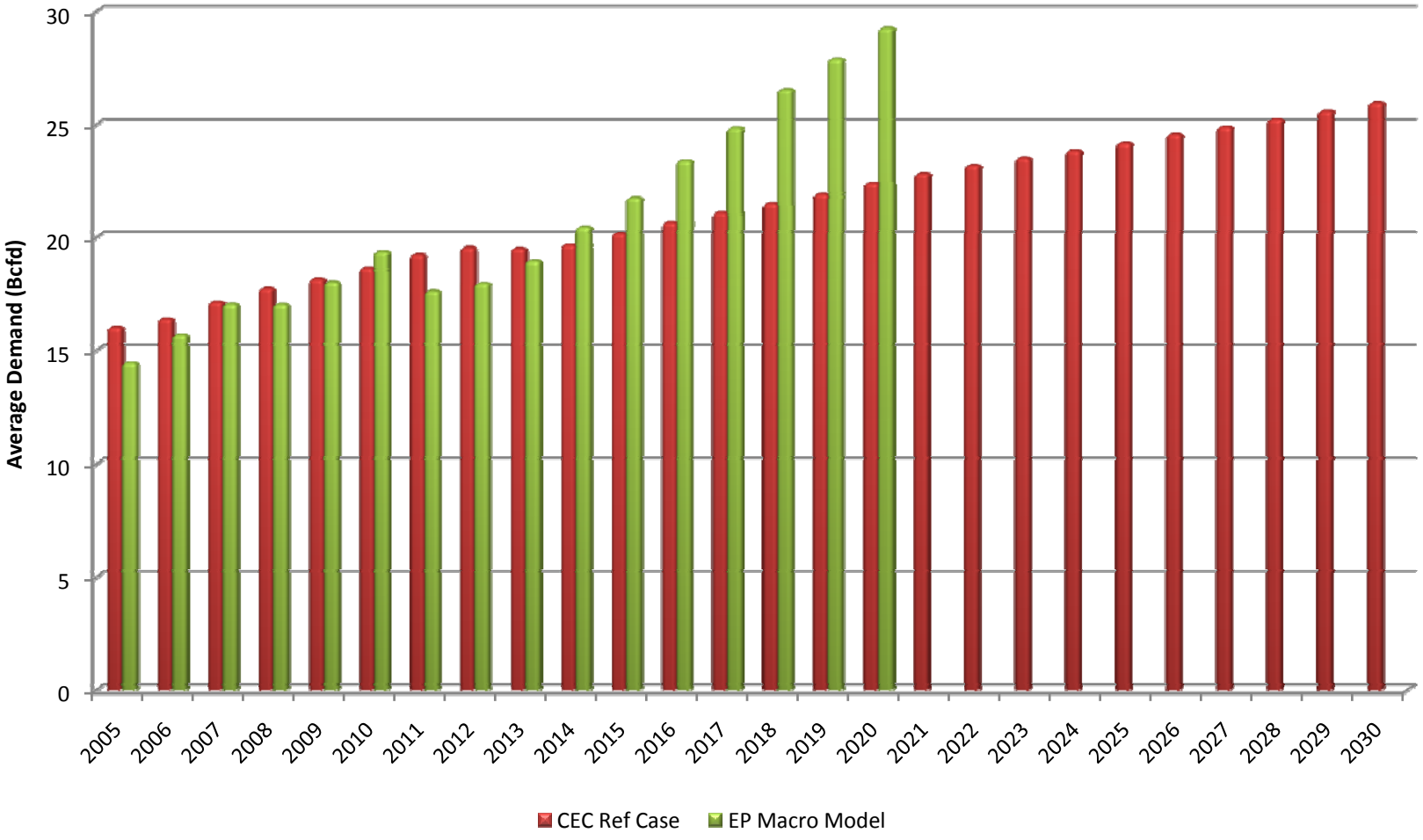
Total PG&E Natural Gas Demand

Total SoCal Natural Gas Demand

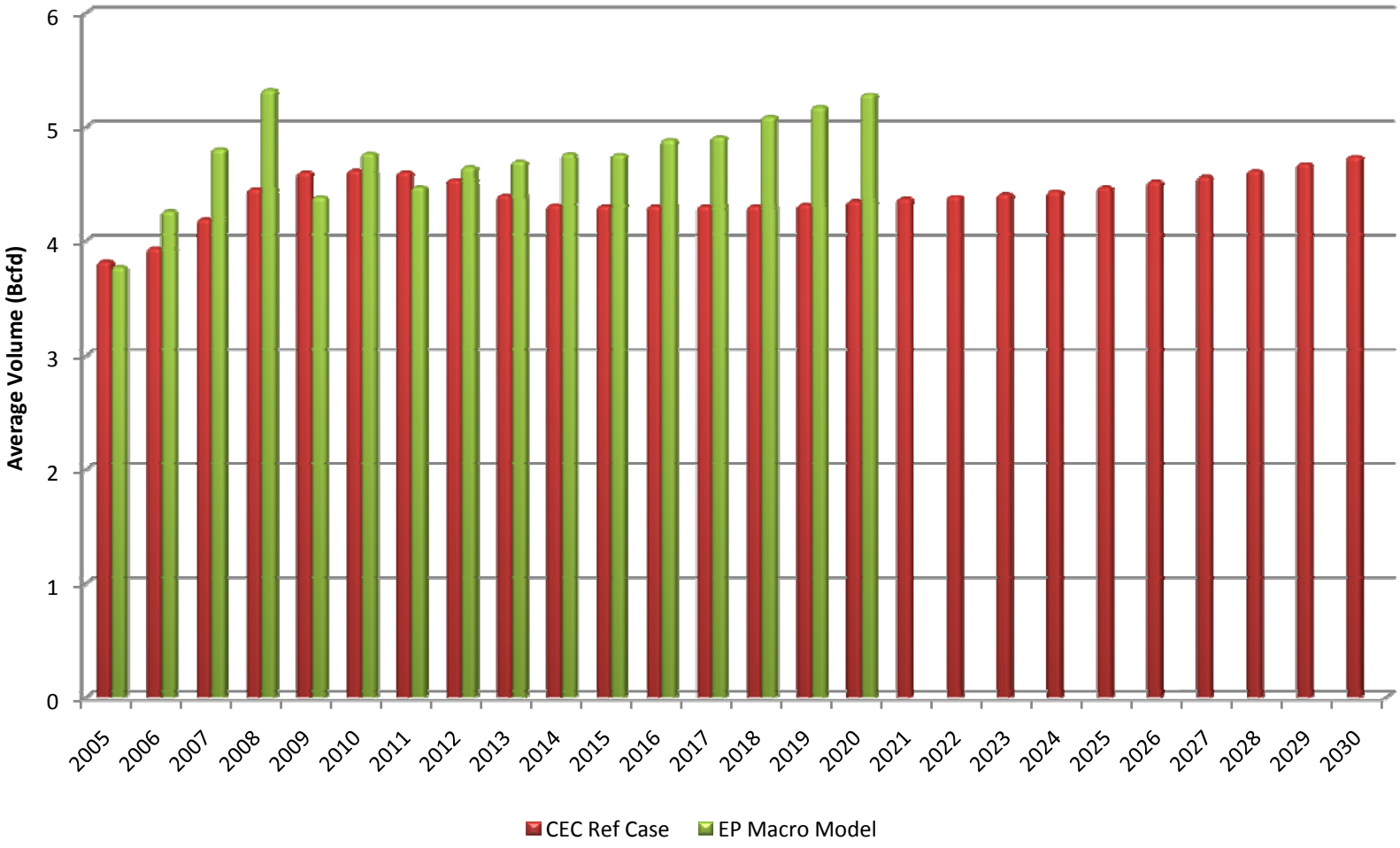
Total SDG&E Natural Gas Demand



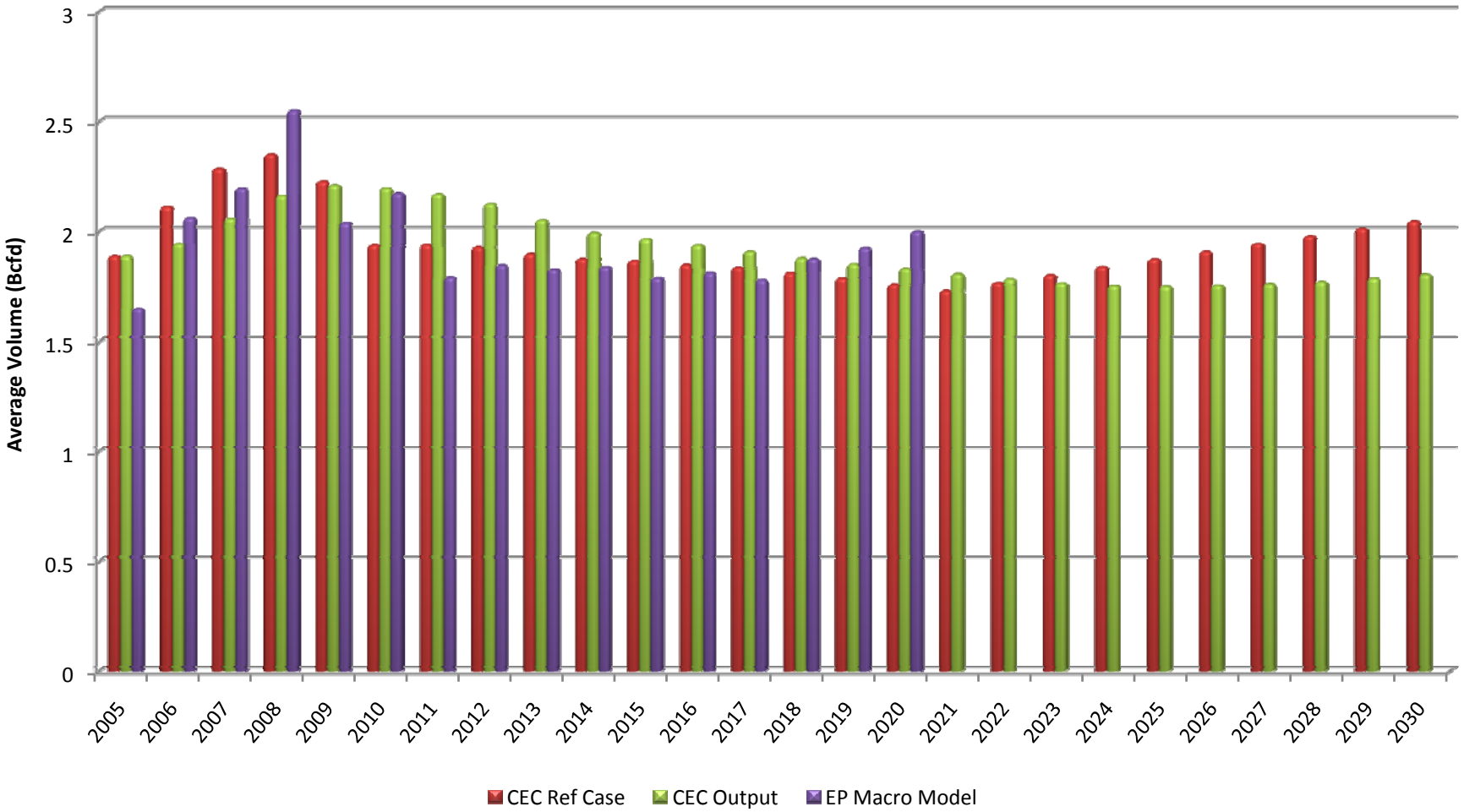
Total U.S. Power Generation Equivalent Gas Demand



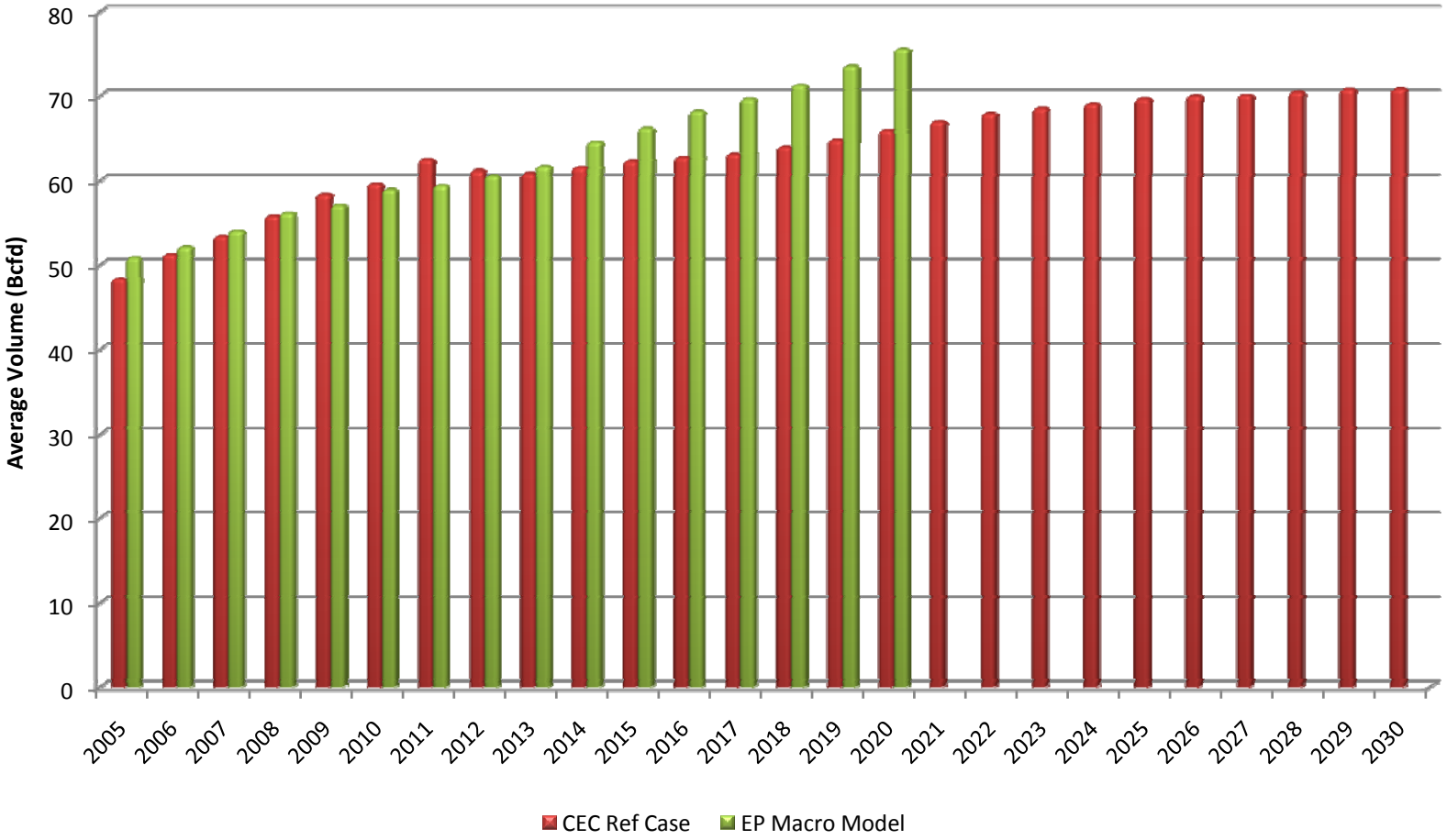
WECC Power Generation Gas Equivalent Demand



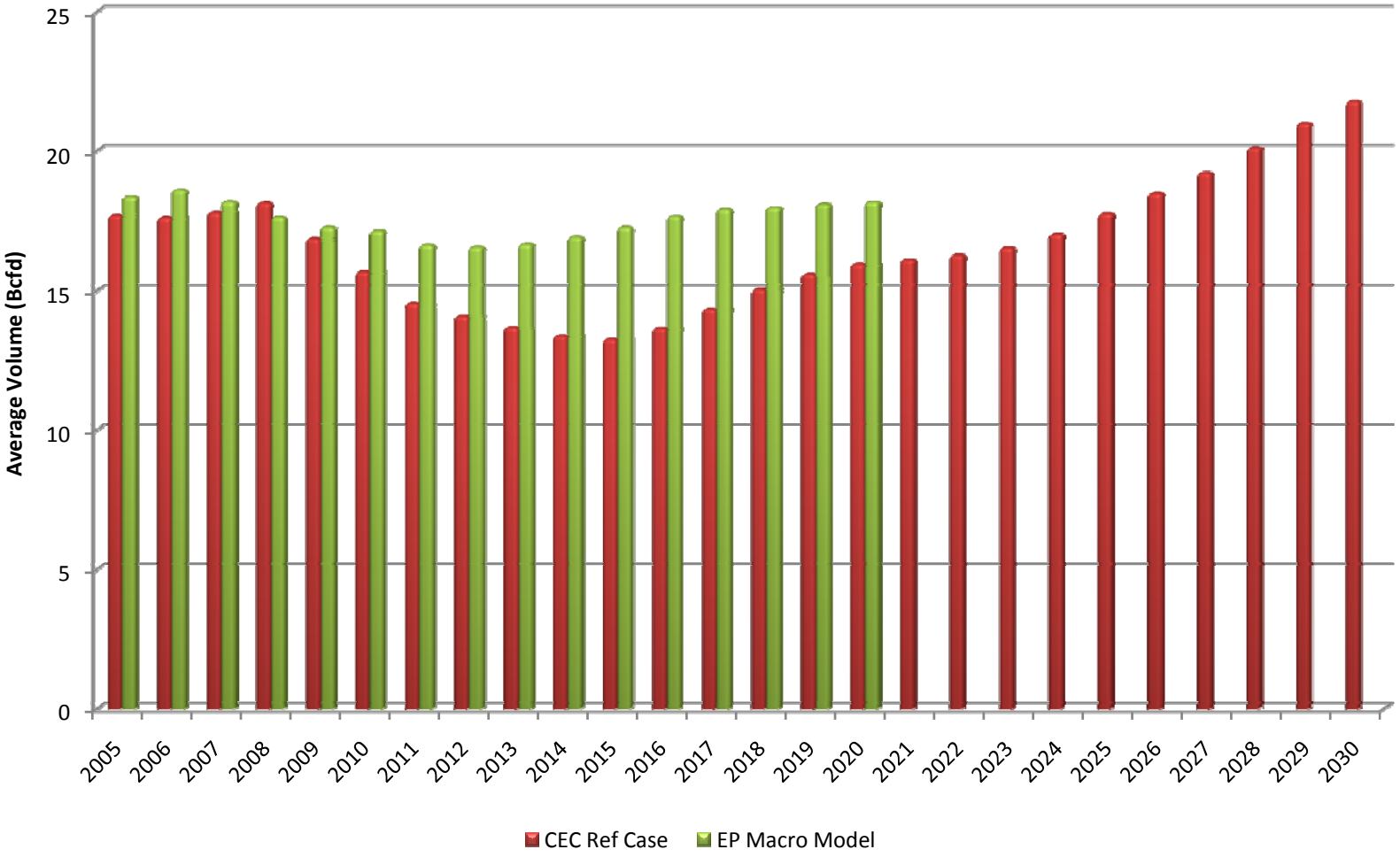
California Power Generation Equivalent Gas Demand



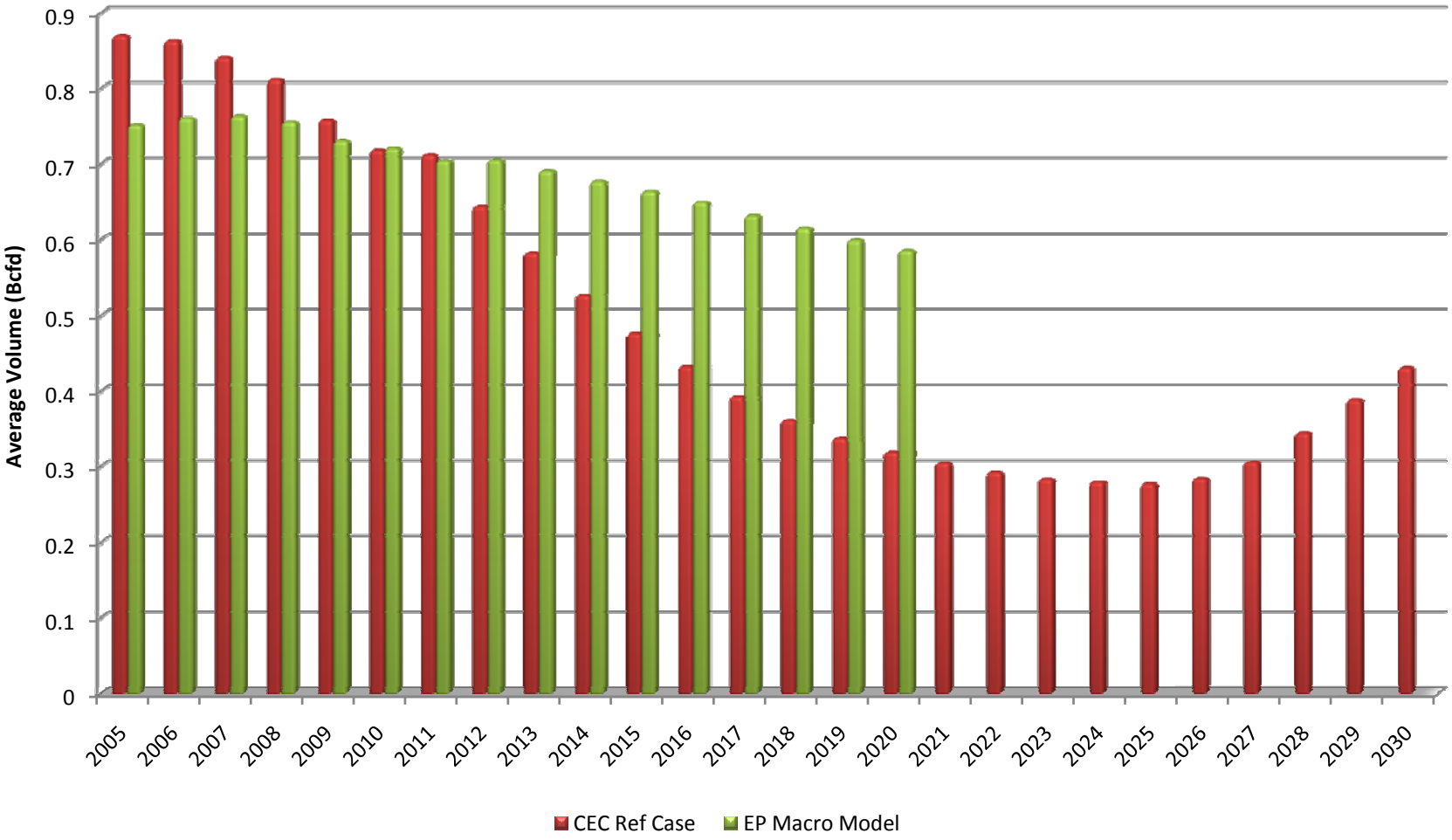
Total U.S. Natural Gas Production



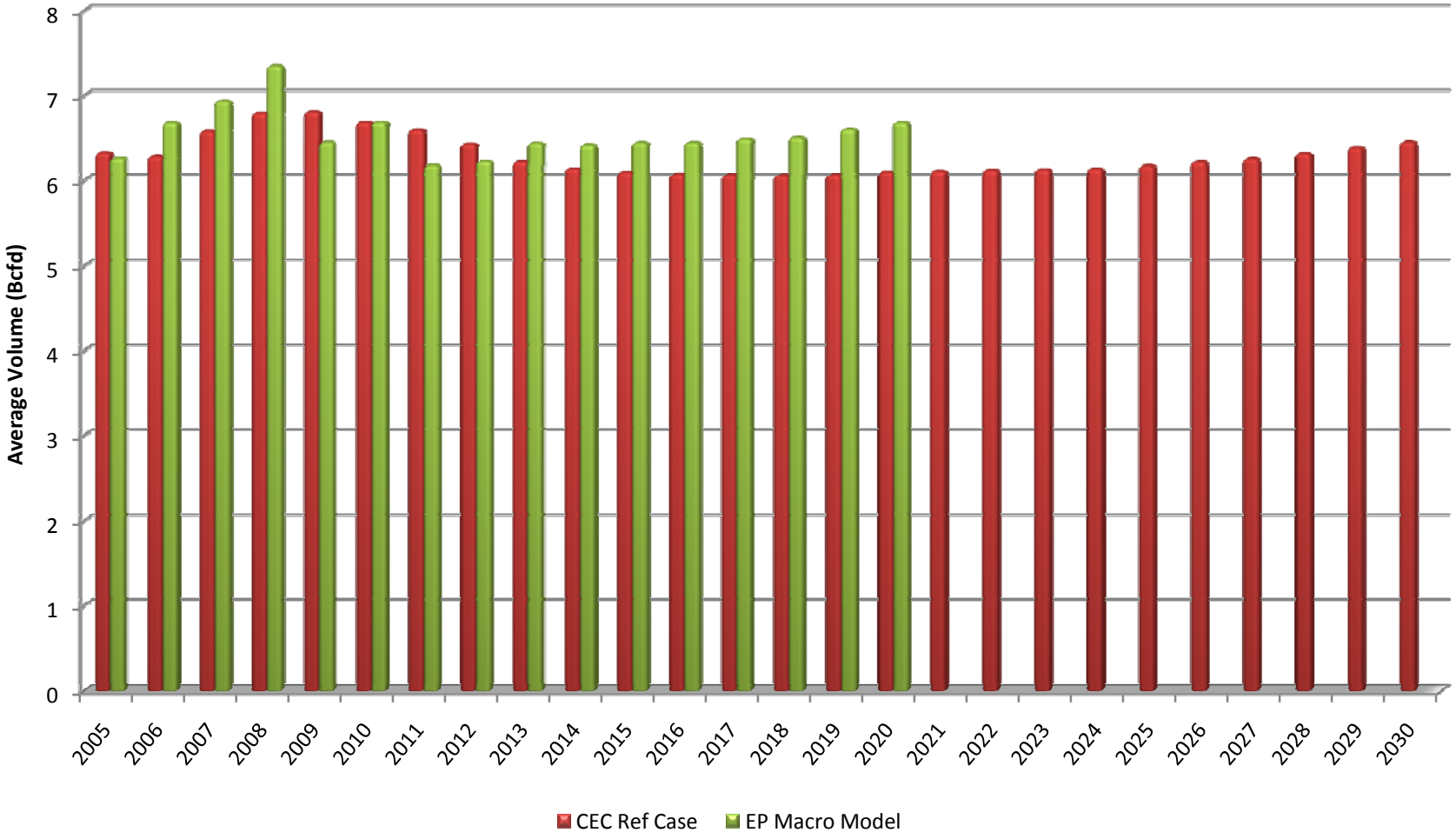
Total Canada Natural Gas Production



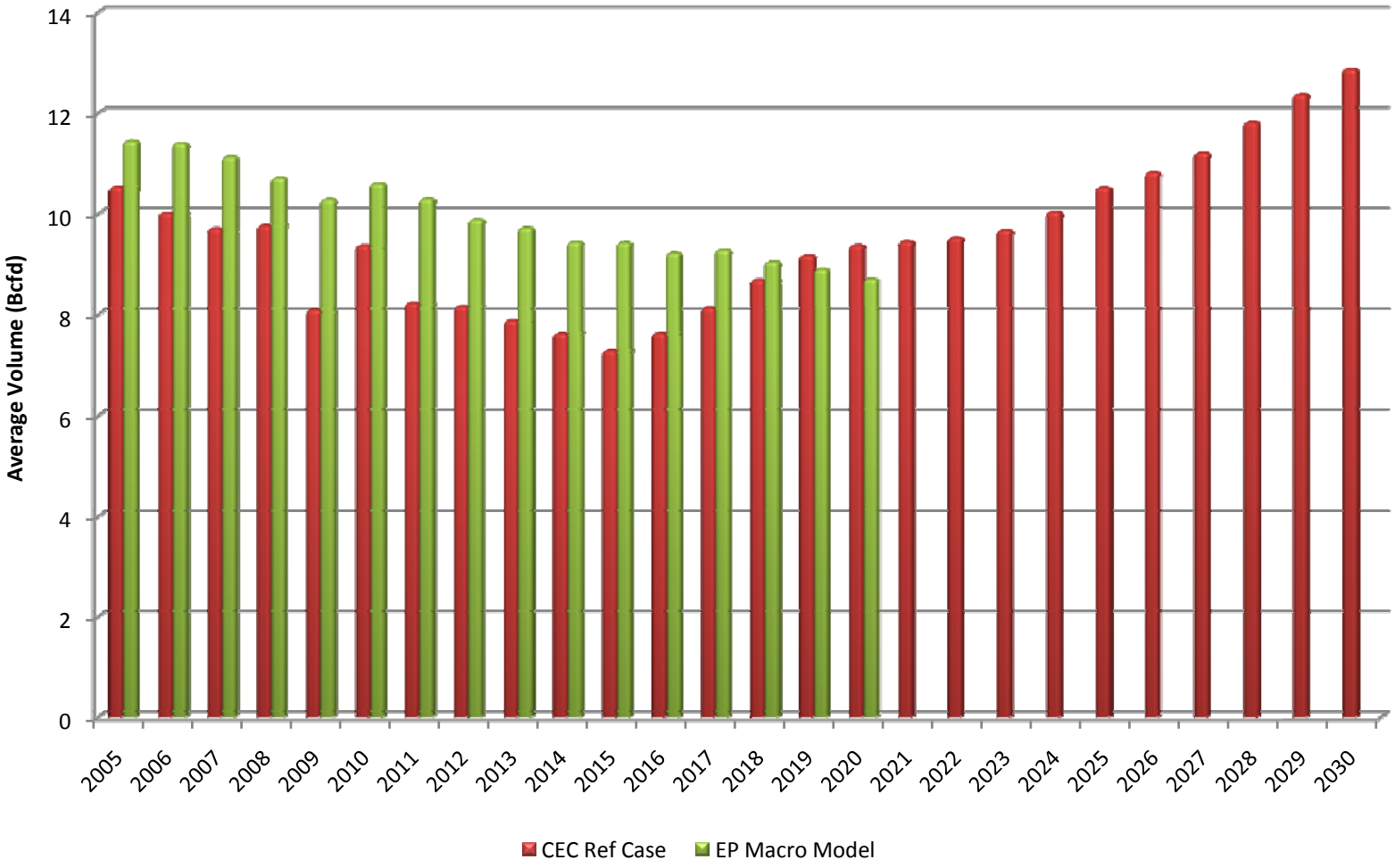
California Natural Gas Production



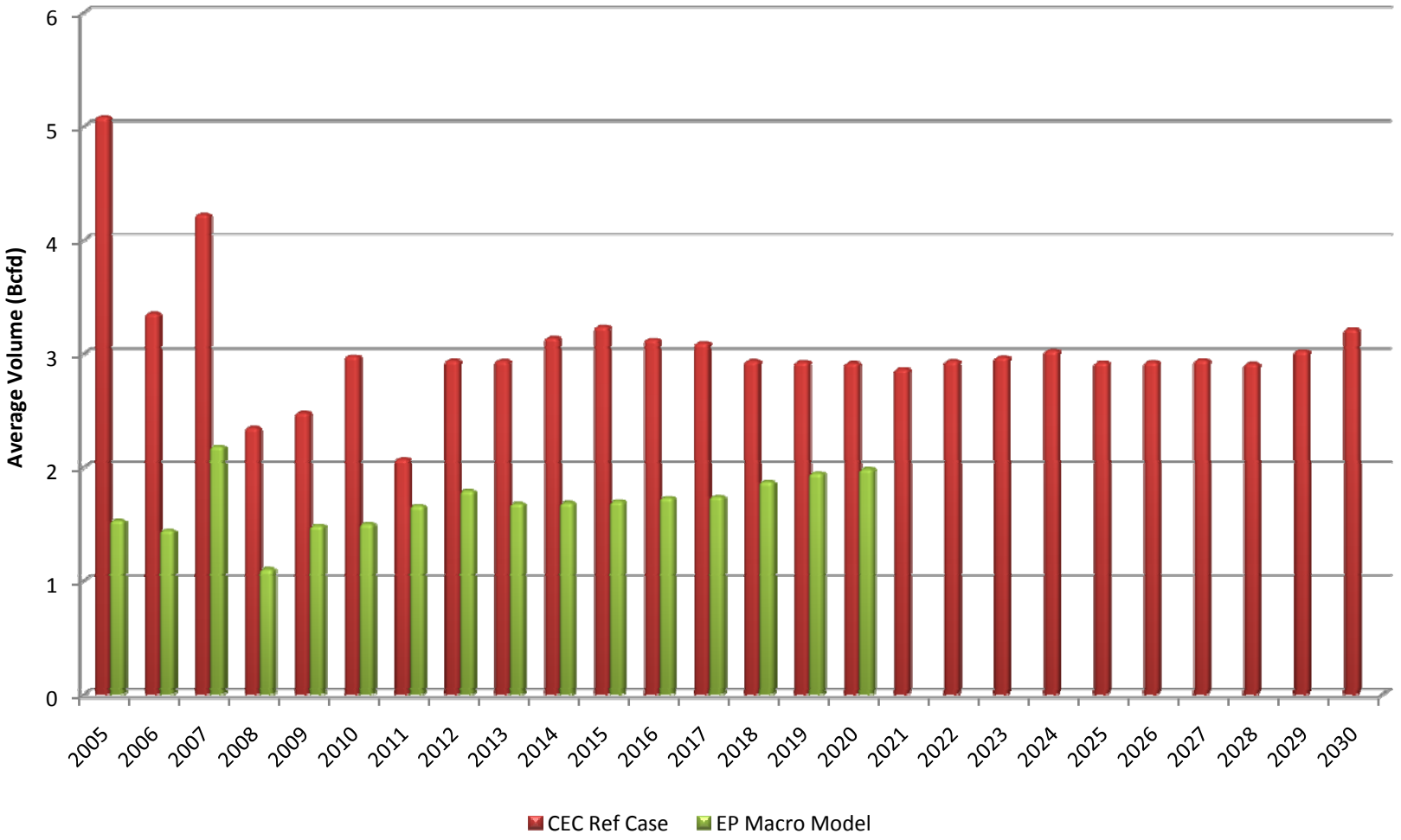
Total California Supply

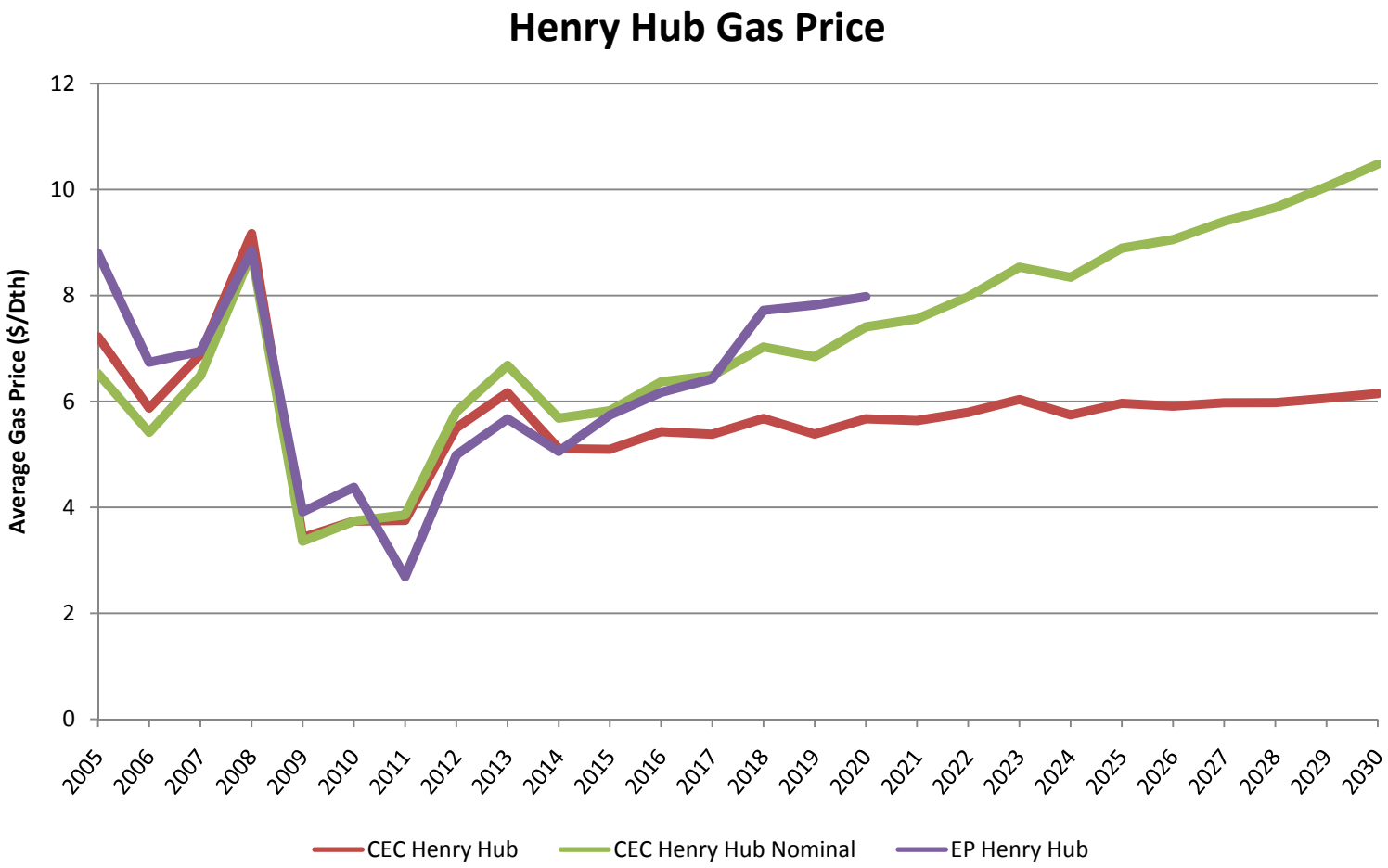


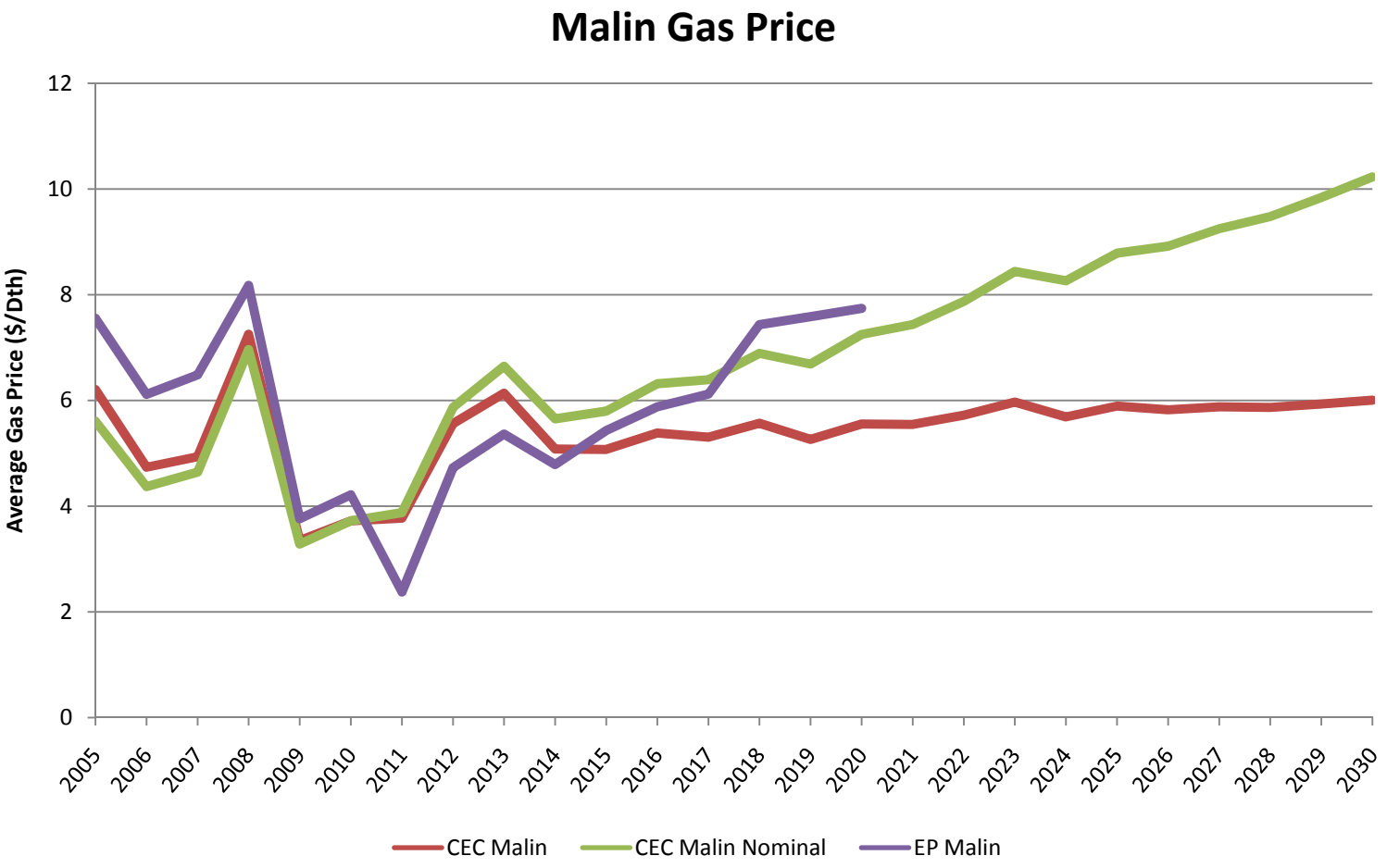
Total Canadian Gas Exports to U.S.

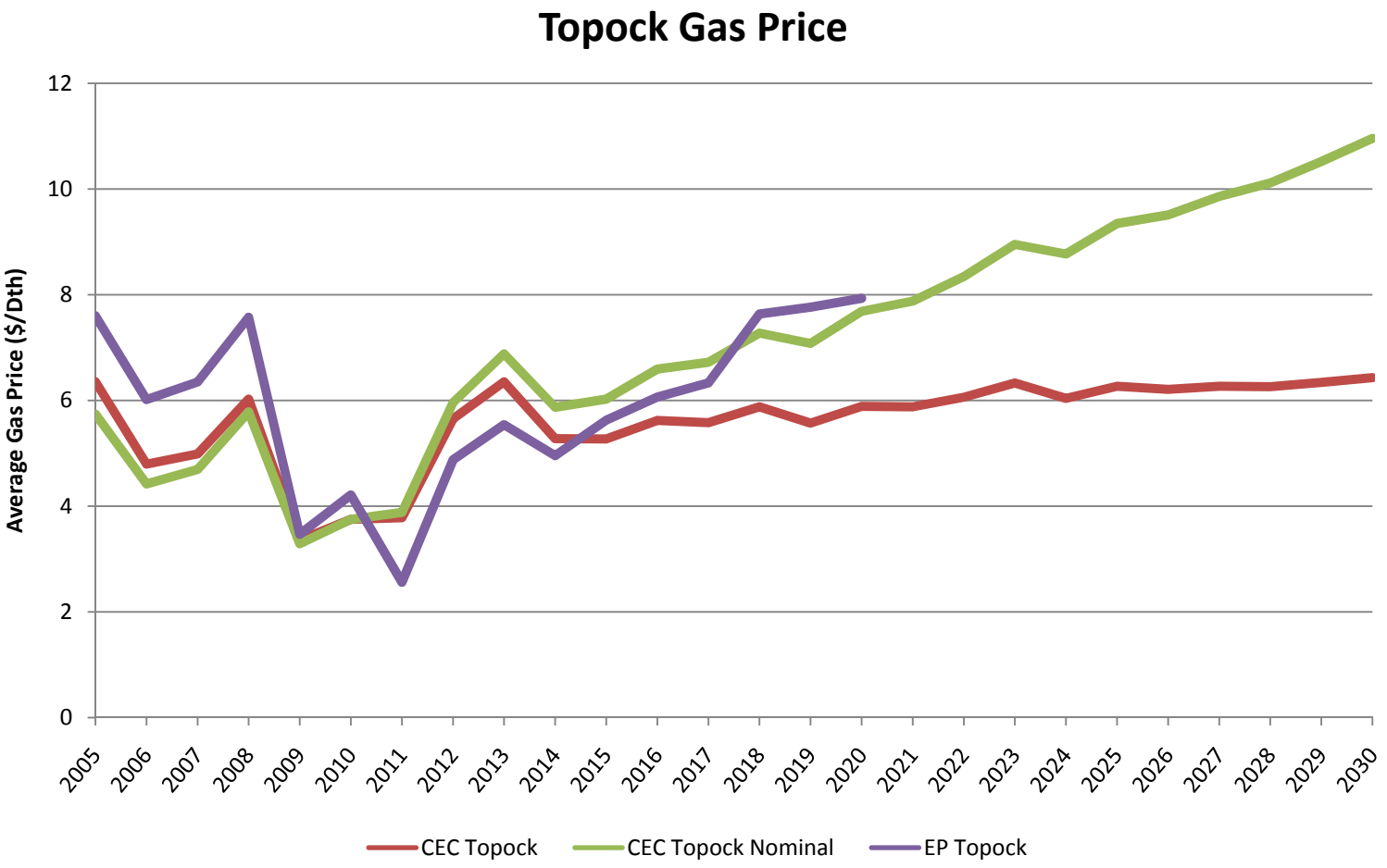


Total U.S. LNG Imports




Henry Hub Gas Price
Average Gas Price ($/Dth)
0
2
4
6
8
10
12
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
CEC Henry Hub
CEC Henry Hub Nominal
EP Henry Hub


Malin Gas Price
Average Gas Price ($/Dth)
0
2
4
6
8
10
12
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
CEC Malin
CEC Malin Nominal
EP Malin


Topock Gas Price
Average Gas Price ($/Dth)
0
2
4
6
8
10
12
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
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2022
2023
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2026
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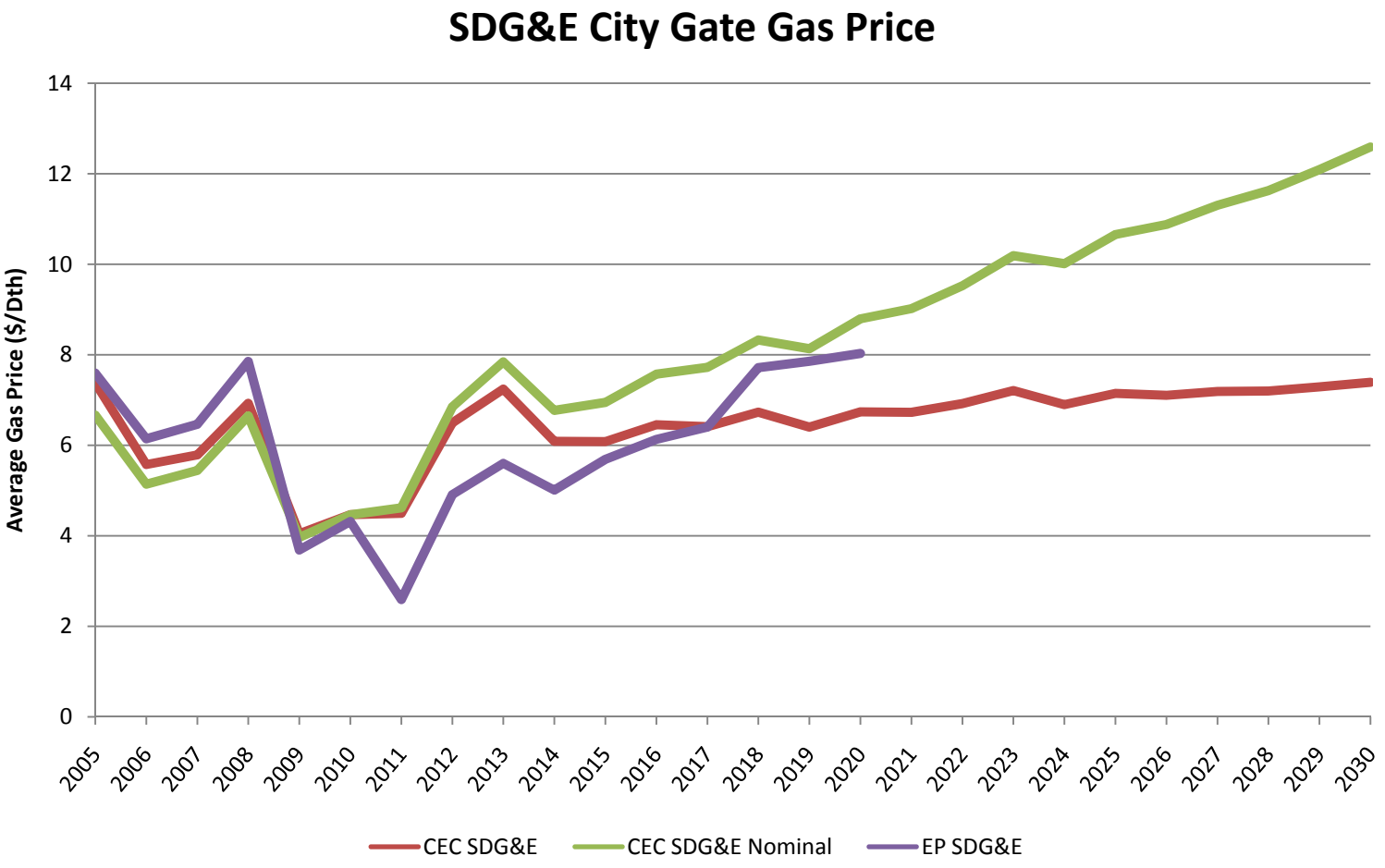
2028
2029
2030
CEC Topock
CEC Topock Nominal
EP Topock


SDG&E City Gate Gas Price
Average Gas Price ($/Dth)
0
2
4
6
8
10
12
14
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
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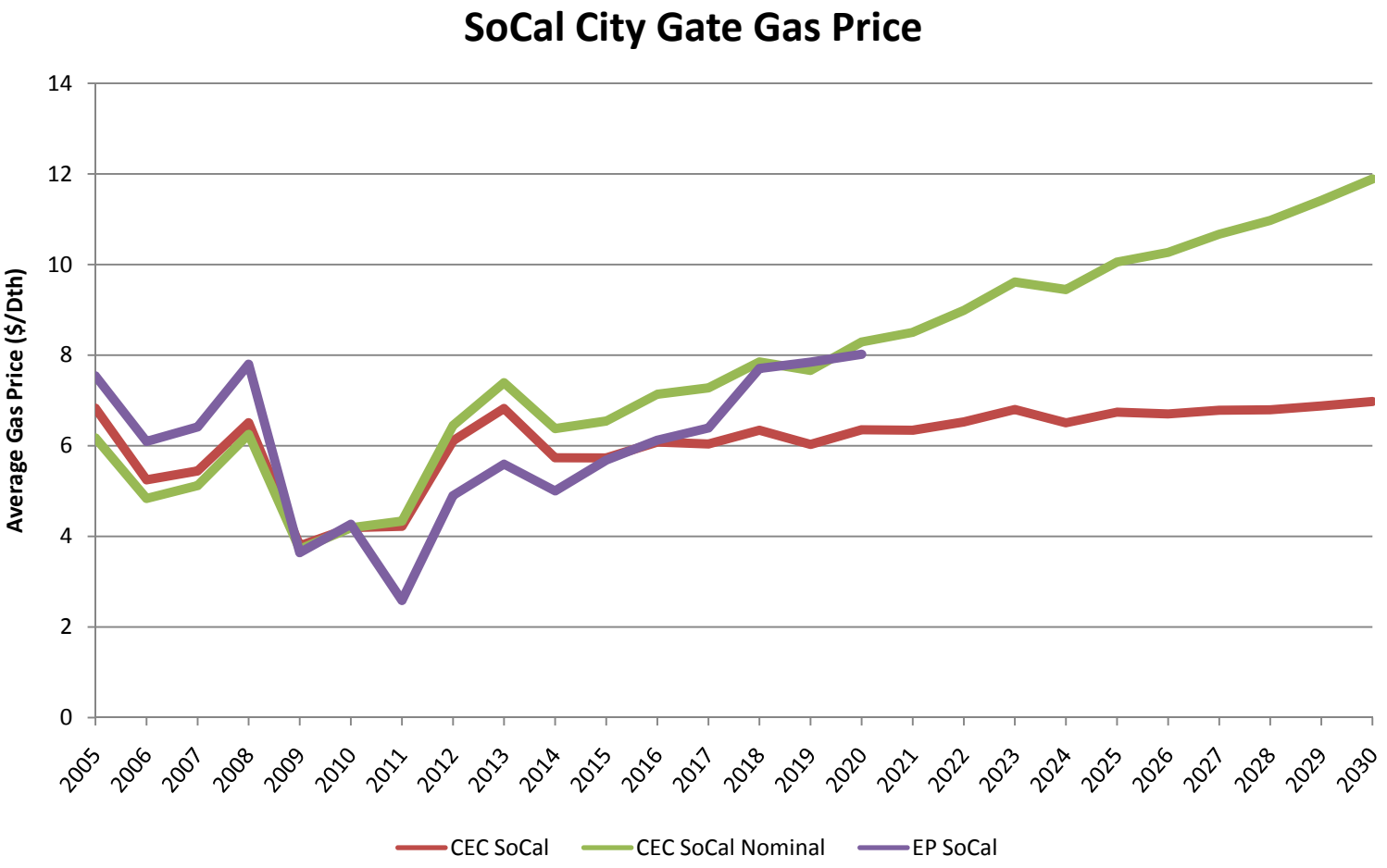
2029
2030
CEC SDG&E
CEC SDG&E Nominal
EP SDG&E


SoCal City Gate Gas Price
Average Gas Price ($/Dth)
0
2
4
6
8
10
12
14
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
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2026
2027
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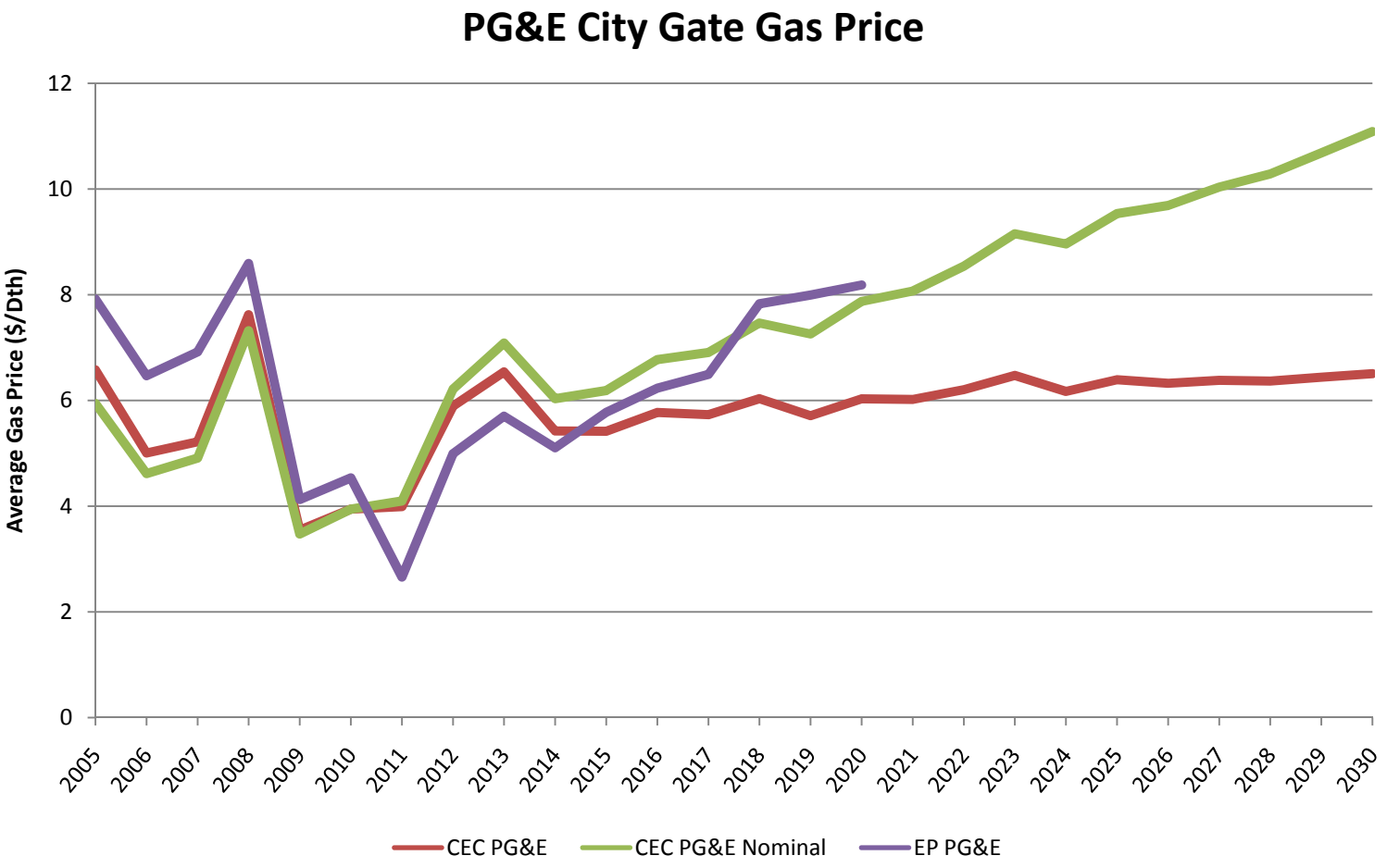
2029
2030
CEC SoCal
CEC SoCal Nominal
EP SoCal


PG&E City Gate Gas Price
Average Gas Price ($/Dth)
0
2
4
6
8
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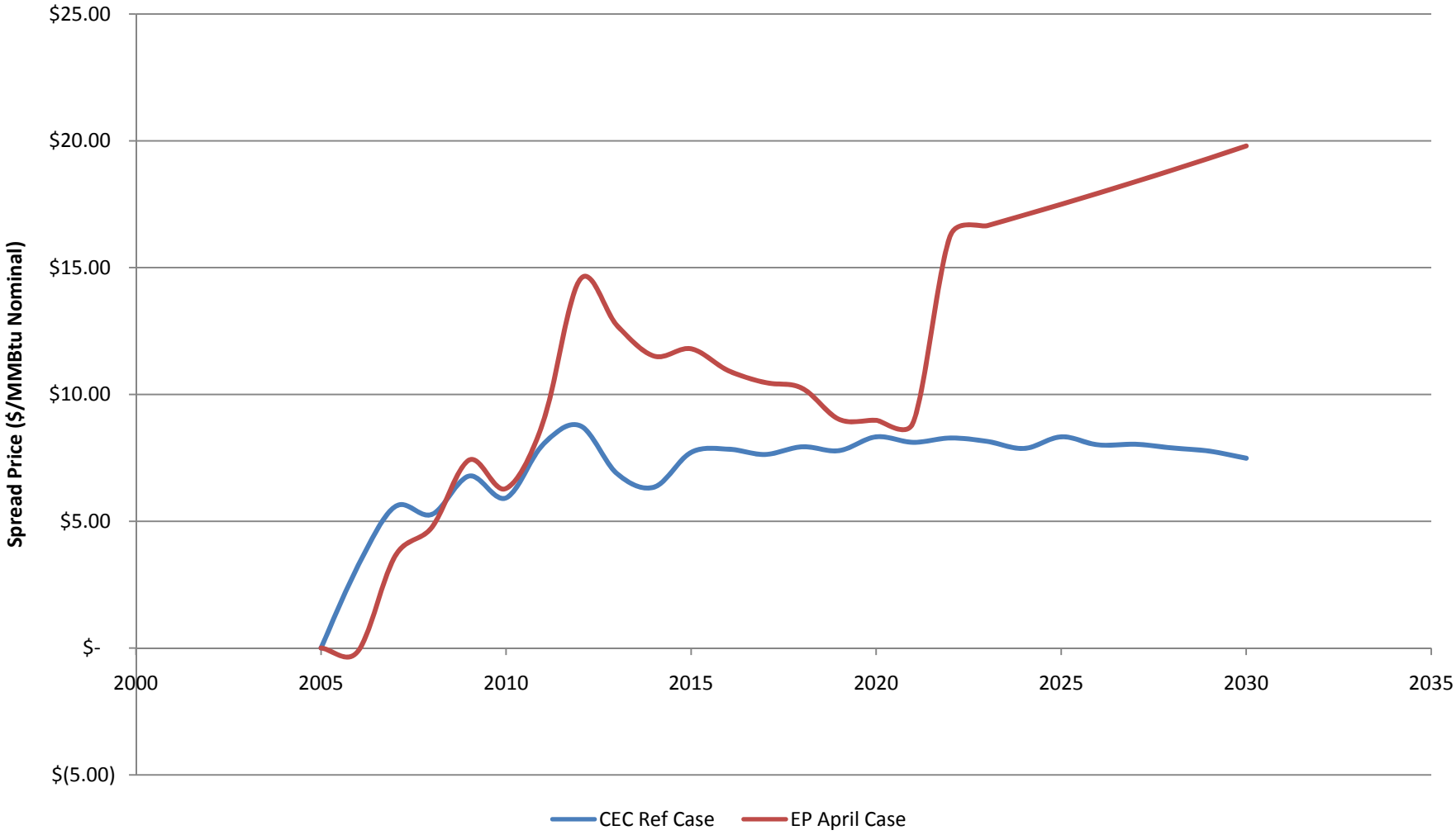
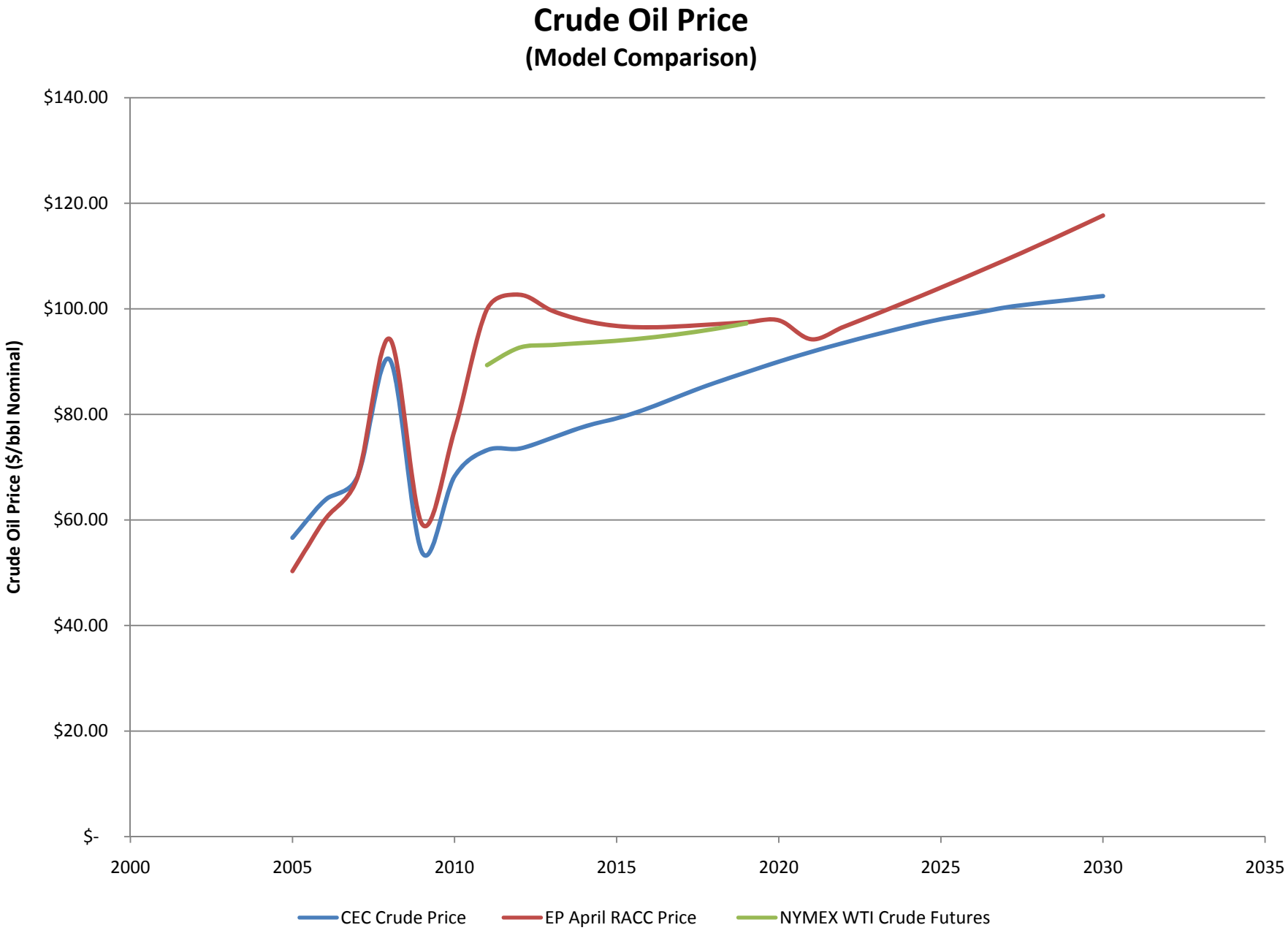
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
CEC PG&E
CEC PG&E Nominal
EP PG&E

Oil-Gas Spread Price
(Model Comparison)



October 2011 NYMEX Prices:
WTI Crude: 87.27 $/bbl
Henry Hub Gas: 3.83 $/MMBtu
Oil-Gas Spread: 11.22 $/MMBtu


Crude Oil Price
(Model Comparison)
Crude Oil Price ($/bbl Nominal)
$140.00
$120.00
$100.00
$80.00
$60.00
$40.00
$20.00
$-
2000
2005
2010
2015
2020
2025
2030
2035
CEC Crude Price
EP April RACC Price
NYMEX WTI Crude Futures

	El Paso Macro	CEC Reference Case
Results in 2022	**Results in 2020**	
DEMAND		
US Tcf/yr	28.74	27.30
US Gas-Fired Electricity Generation Tcf/yr	10.68	8.47
CA Tcf/yr	2.23	2.19
CA Gas-Fired Electricity Generation Tcf/yr	0.73	0.65
SUPPLY		
US Natural Gas Dry Production Tcf/yr	27.58	24.78
US Shale Tcf/yr	~11.3	12.23
US LNG Tcf/yr	0.52	1.07
Canadian Imports Tcf/yr	3.18	3.48
Exports Tcf/yr	1.06	2.5
PIPELINE CAPACITY		
Cumulative New Capacity to CA (TCF) (aggregated from 2010 to 2022)	see note	**0.08**
Pipeline Utilization; % of total (EPNG+TW+MJ/ GTN/ KRGT/ Ruby)	63/37/78/56	36.82/68.46/72.87/47.72
PRICES		
Price at Henry Hub ($ 2010)/Mmbtu	6.23	5.78
Basis to CA Border at Topock ($2010)/Mmbtu	-0.039	0.282
Basis to Malin ($2010)/Mmbtu	-0.187	-0.076
Key Assumptions		
Average Annual GDP Growth Rate	2.50%	2.7%
Gas Technology Improvement Average Annual Growth Rate	embeded in model inputs	1%
Total US Electricity Production (GWh)	4,344,177	4,766,558
US Electricity Resource Mix (% of total from Fossil/Nuclear/Hydro/Renew)	69/18/6/7	66.8/17.8/5.45/15.37
Total CA Electricity Production (GWh)	228,255	238,058
CA Electricity Resource Mix (% of total from Fossil/Nuclear/Hydro/Renew)	45/15/18/22	44.5/14.5/11.5/29.4