2012 Proposed IPM Potential Scenarios

November 28, 2012

DRAFT RGGI Potential Scenario Analysis
Purpose

- The following slides present projections from the latest 2012 RGGI Reference Case and draft potential scenarios.
- These projections are draft and may change as ICF makes refinements based on state review and input.
- This analysis provides information for the overall program review process. The scenario specifications do not reflect a preference for or selection of any specific policy.

DRAFT RGGI Potential Scenario Analysis
Assumptions Development

- The IPM Reference Case was updated in August 2012 and projected emissions were significantly lower than previous modeling.
  - Cumulatively emissions dropped about 17% from the previous reference case.
  - The 2012 IPM Reference Case emissions at RGGI affected plants are projected to be 91 M tons in 2012.

2012 Emissions from Affected Sources (Millions)

- 2012 Q1-Q3 emissions from RGGI COATS
- 2012 Q4 emissions projection based upon RGGI COATS 2011 Q4 emissions

	Q1 2012	Q2 2012	Q3 2012	Q4 2012	Total
Emissions	18	22	31	20 (est.)	**91 (est.)**

DRAFT RGGI Potential Scenario Analysis
Assumptions Development

- The IPM potential scenarios released in March 2012, using the 2011 reference case, analyzed three alternative cap levels in 2014: 106 M Tons, 115 M Tons, and 120 M Tons.
- Based on the updated reference case (released August 2012), the states analyzed the March 2012 potential cap scenarios.
- Analysis demonstrated that:
  - The 115 and 120 cap levels and assumptions would result in prices at the reserve price; cumulatively, allowances would exceed emissions because emissions have fallen so significantly.
  - For 106 cap level, analysis indicated need to address the projected private bank of allowances carried into 2014 and beyond (projected year of the cap change); otherwise no cumulative scarcity occurs in the model.
- Potential scenario modeling with the updated 2012 reference case uses a 106, 101, 97 and 91 cap. All potential caps reflect the interim adjustment for banked allowances from 2014-2020 to account for the projected bank.

DRAFT RGGI Potential Scenario Analysis
Scenario Assumptions

Scenario Name	Cost Containment Reserve	Results of Interim Adjustment for Banked Allowances	2012-2013 Projected Banked Allowances	First Control Period Banked Allowances
106 Cap (2009-2011 Average Emissions)	Up to 10 M allowances annually	2014: 88 M Tons 2020: 76 M Tons	68 M allowances	47 M allowances
101 Cap (2011 Emissions)	Up to 10 M allowances annually	2014: 83 M Tons 2020: 74 M Tons	68 M allowances	47 M allowances
97 Cap (2014 projected emissions)	Up to 10 M allowances annually	2014: 80 M Tons 2020: 68 M Tons	68 M allowances	47 M allowances
91 Cap (2012 projected emissions)	Up to 10 M allowances annually	2014: 73 M Tons 2020: 65 M Tons	68 M allowances	47 M allowances

The modeling assumes that market participants do not bank allowances in 2012. In 2013, the modeling assumes the market is aware of program changes and assumes 100% banking of available allowances.

DRAFT RGGI Potential Scenario Analysis
Assumptions Development

Interim Adjustment for Banked Allowances

- Adjusts the 106, 101, 97, & 91 caps for the maximum projected 2009-2013 private bank of allowances.
- For the modeling, we assume the projected 2009-2013 private bank of allowances is 115 M.
- 115 M represents an estimated 47 M first control bank and projected bank for 2012 and 2013 (market is made aware of policies in 2013, so there is banking in 2013 but not in 2012).
- Adjustment is spread across 2014-2020.

	2014	2015	2016	2017	2018*	2019	2020
106 Cap	106	103	101	95	95	95	91
Interim Adjustment for Banked Allowances	88	86	84	79	79	79	76
101 Cap	101	98	96	91	91	91	87
Interim Adjustment for Banked Allowances	83	81	79	75	75	75	74
97 Cap	97	95	92	88	88	88	83
Interim Adjustment for Banked Allowances	80	77	75	72	72	72	68
91 Cap	91	89	87	82	82	82	78
Interim Adjustment for Banked Allowances	73	72	70	66	66	66	65

* The 2018 model run year is representative of 2017-2019. The averaged 2018 input represents potential policy (same as current policy) of a 2.5% per year reduction to the cap.

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Scenario Assumptions

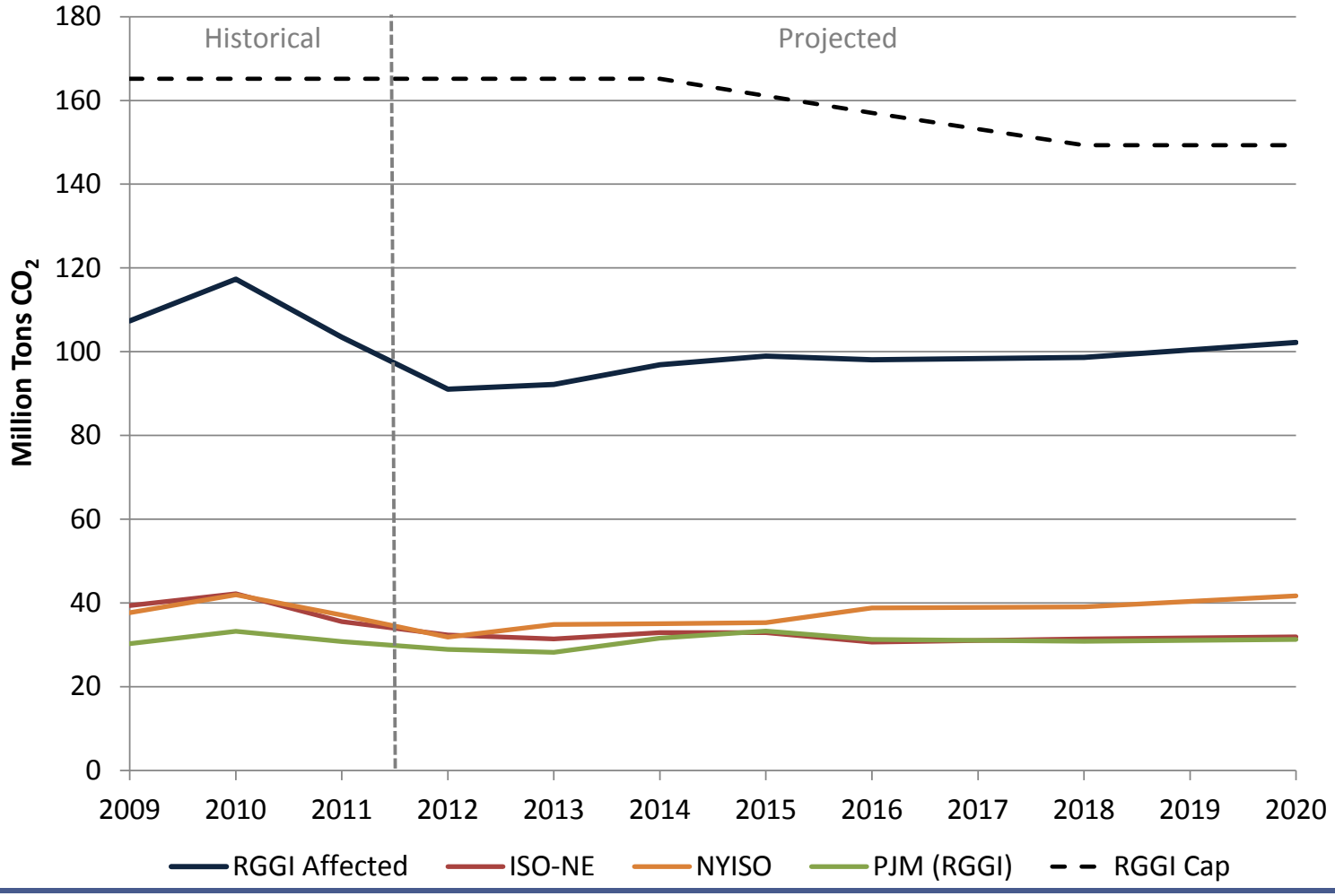
- All scenarios include a CCR. The CCR trigger price in 2014 is $5/ton; 2015-17 is $7/ton; 2018-20 is $10/ton. The 10 M Tons available annually in the CCR is in addition to the adjusted caps shown in the previous slide.

- Model run years are 2012, 2013, 2014, 2015, 2016, 2018 (representing 2017-2019), 2020.

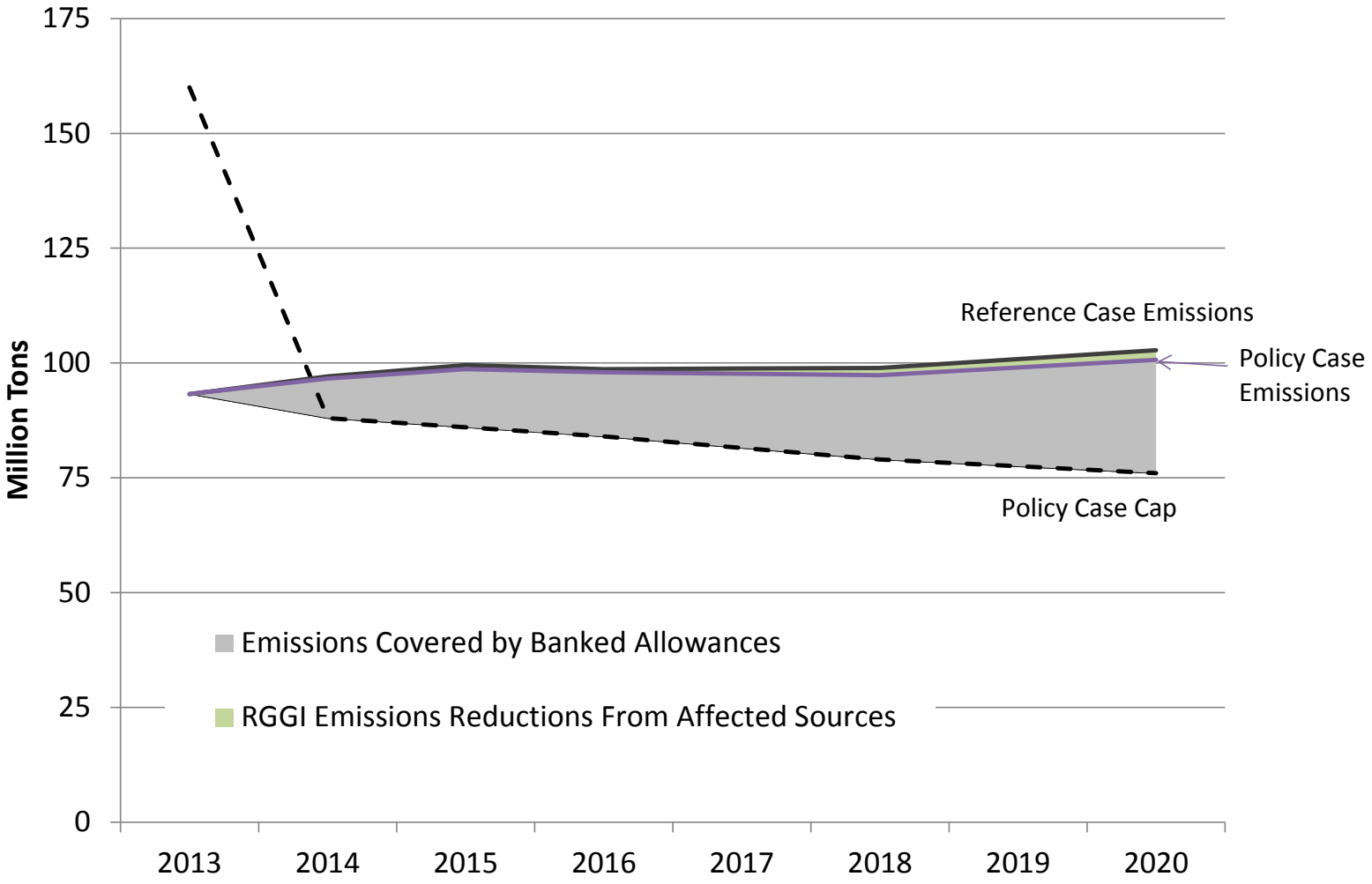
Reference Case Projections

CO_2 Emissions

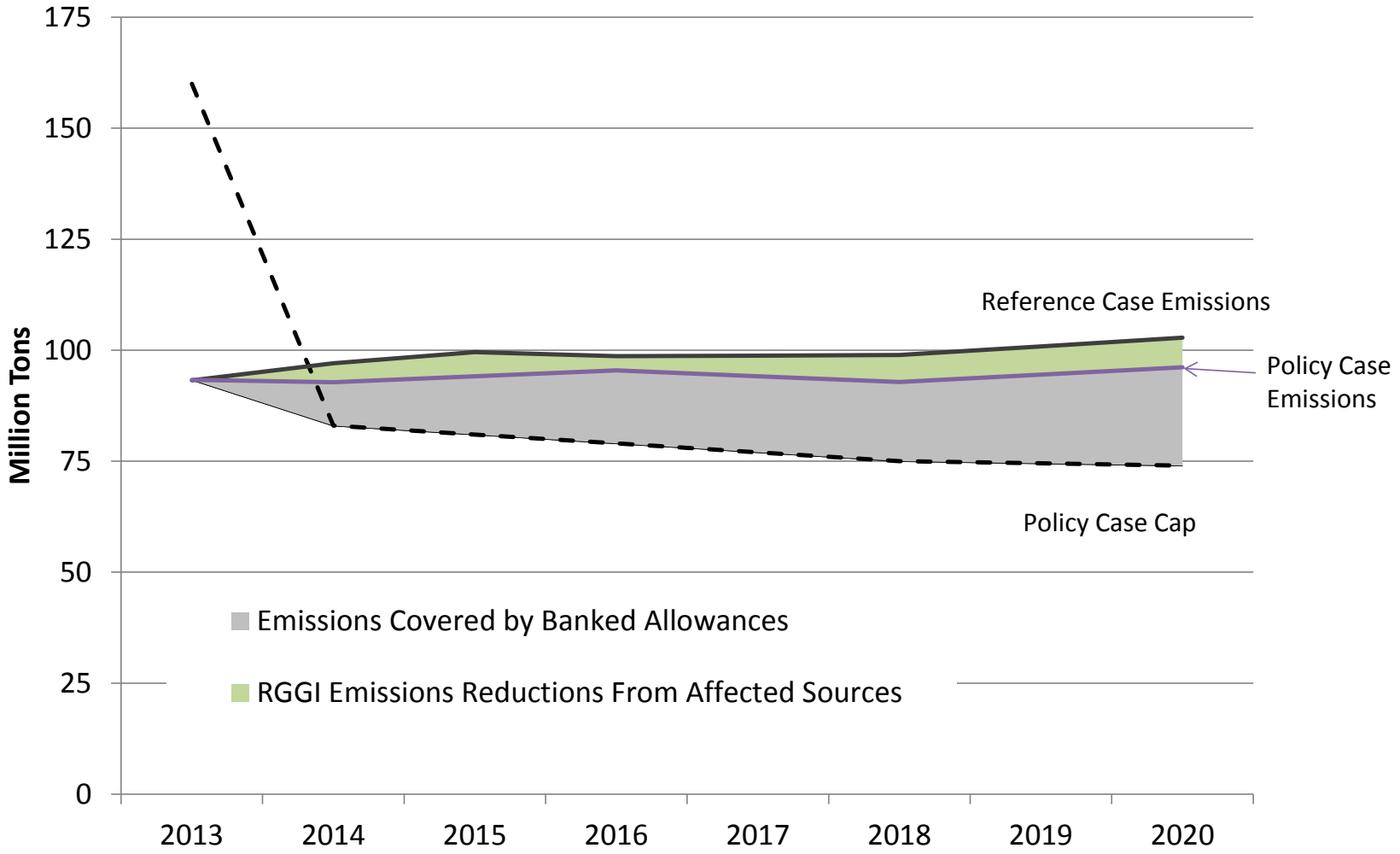
- The chart shows historical and projected CO_2 emissions for the RGGI states and by ISO.



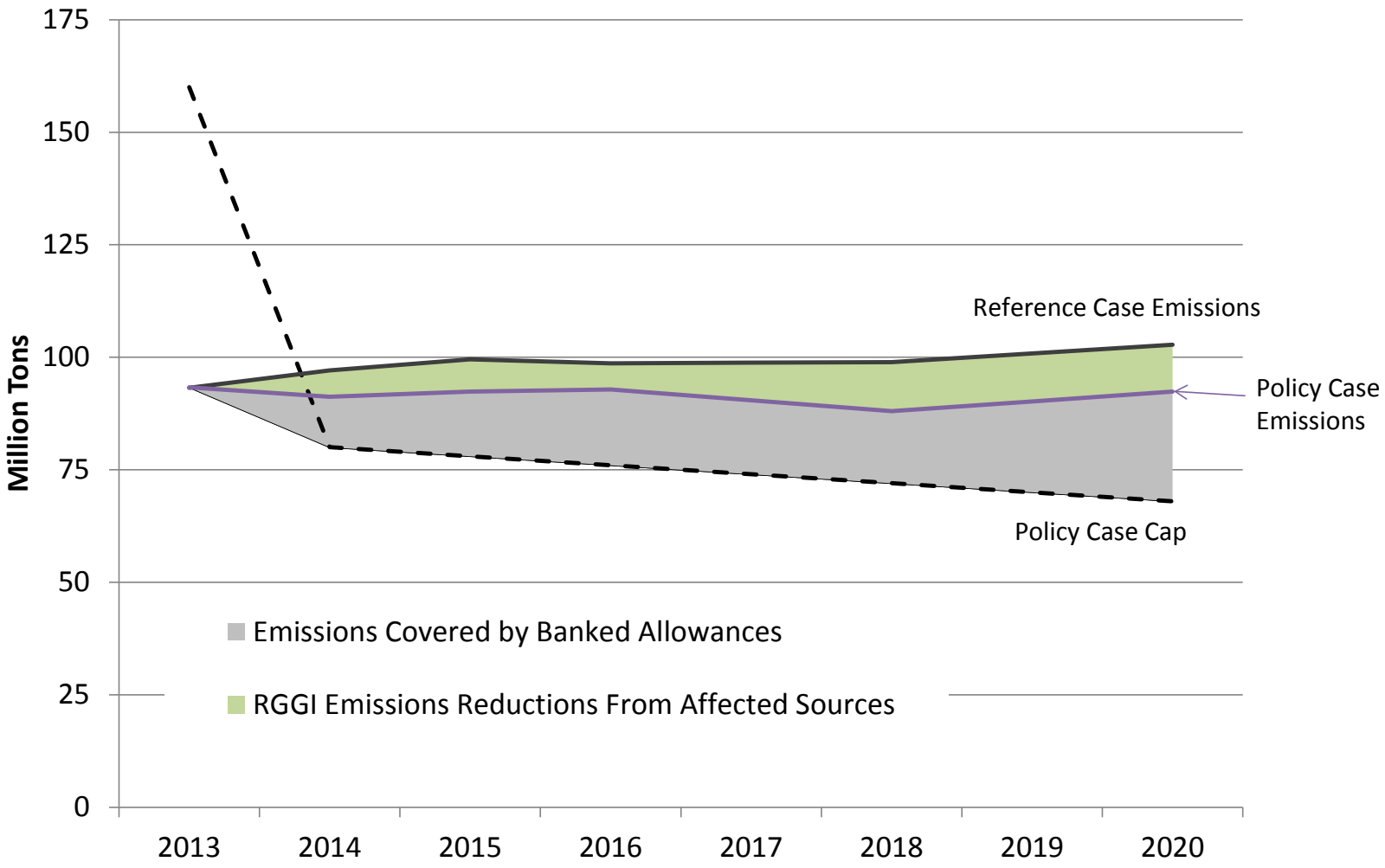
Sources of Emission Reductions *106_Cap*



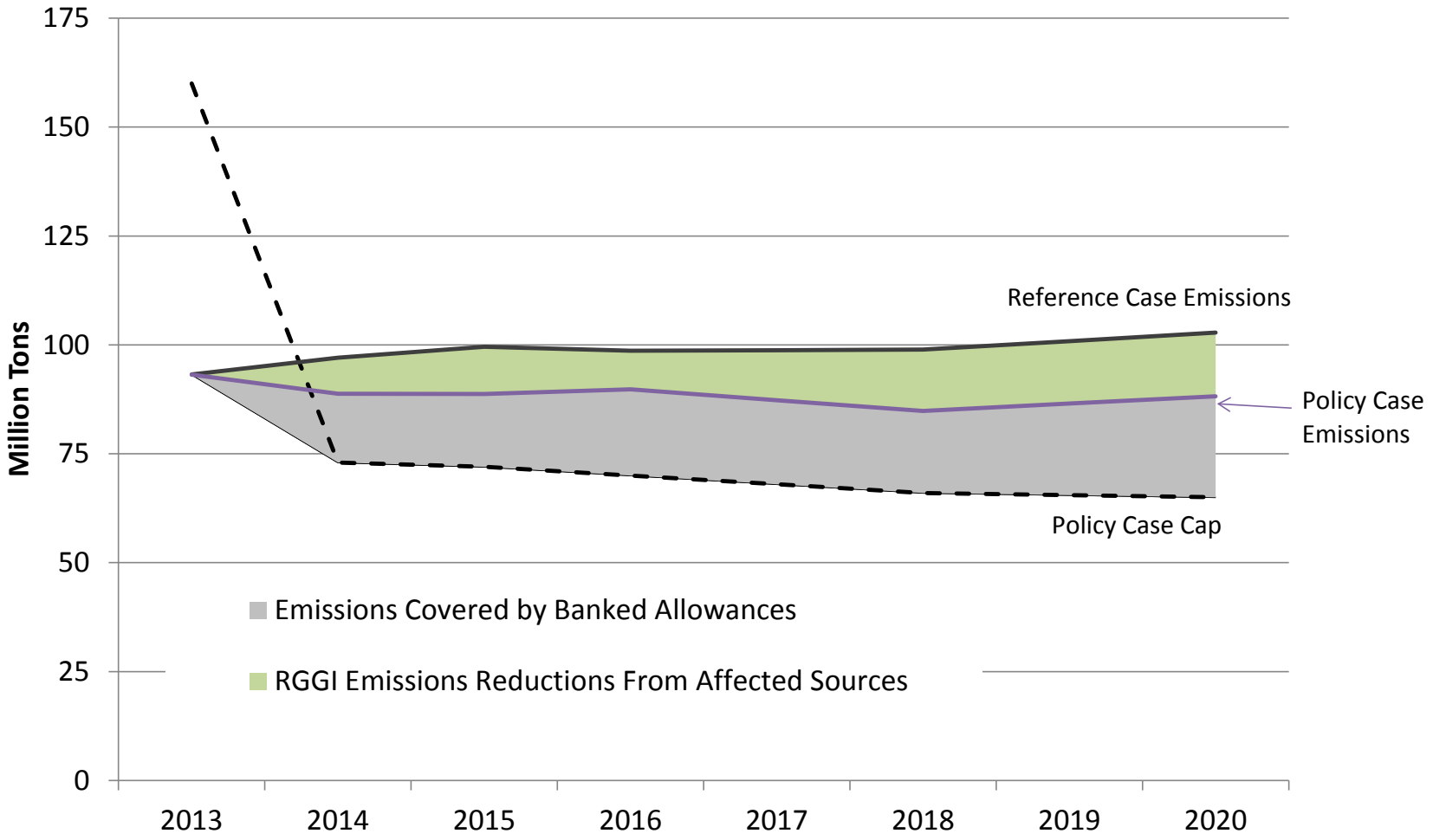
Sources of Emission Reductions *101_Cap*



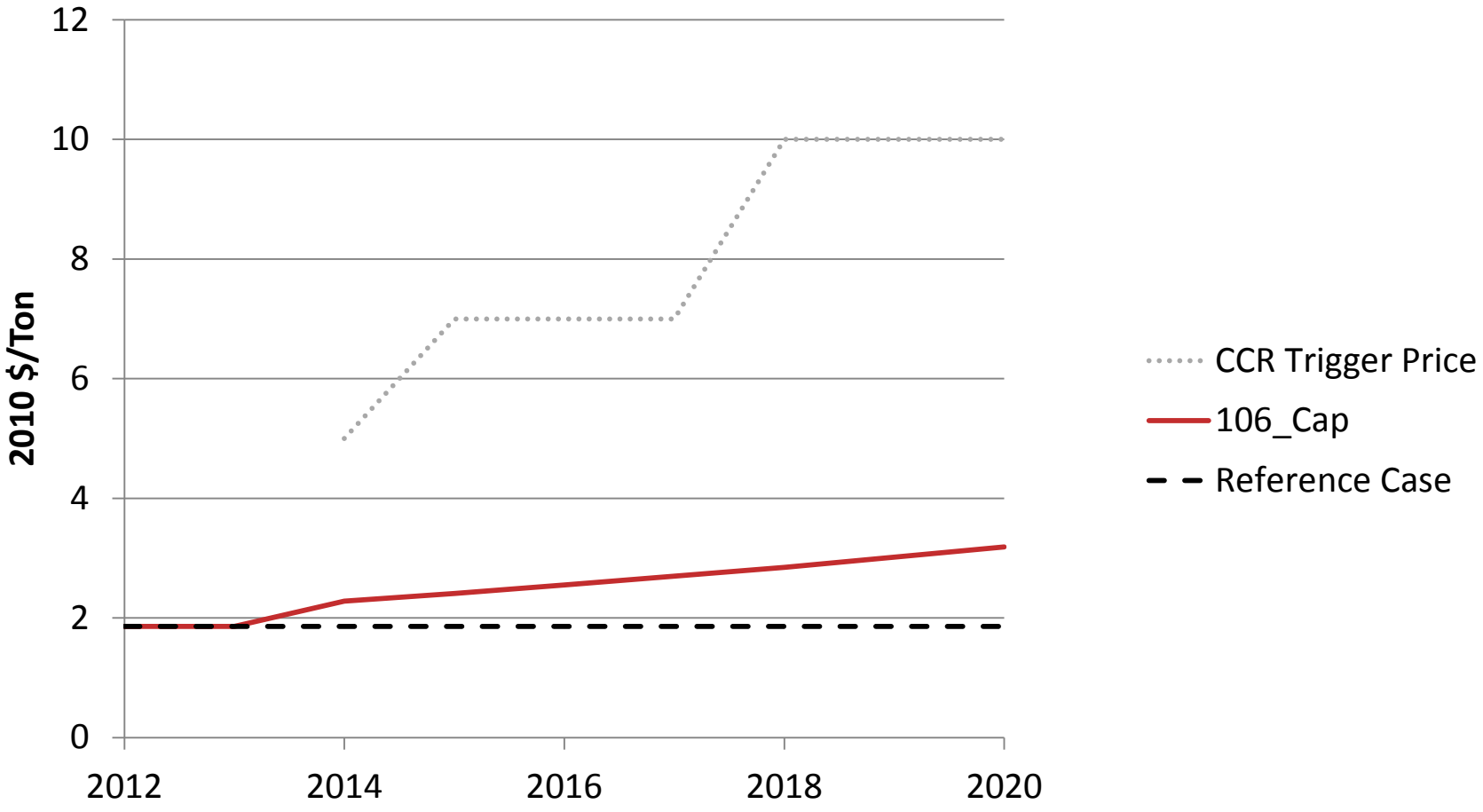
Sources of Emission Reductions *97_Cap*



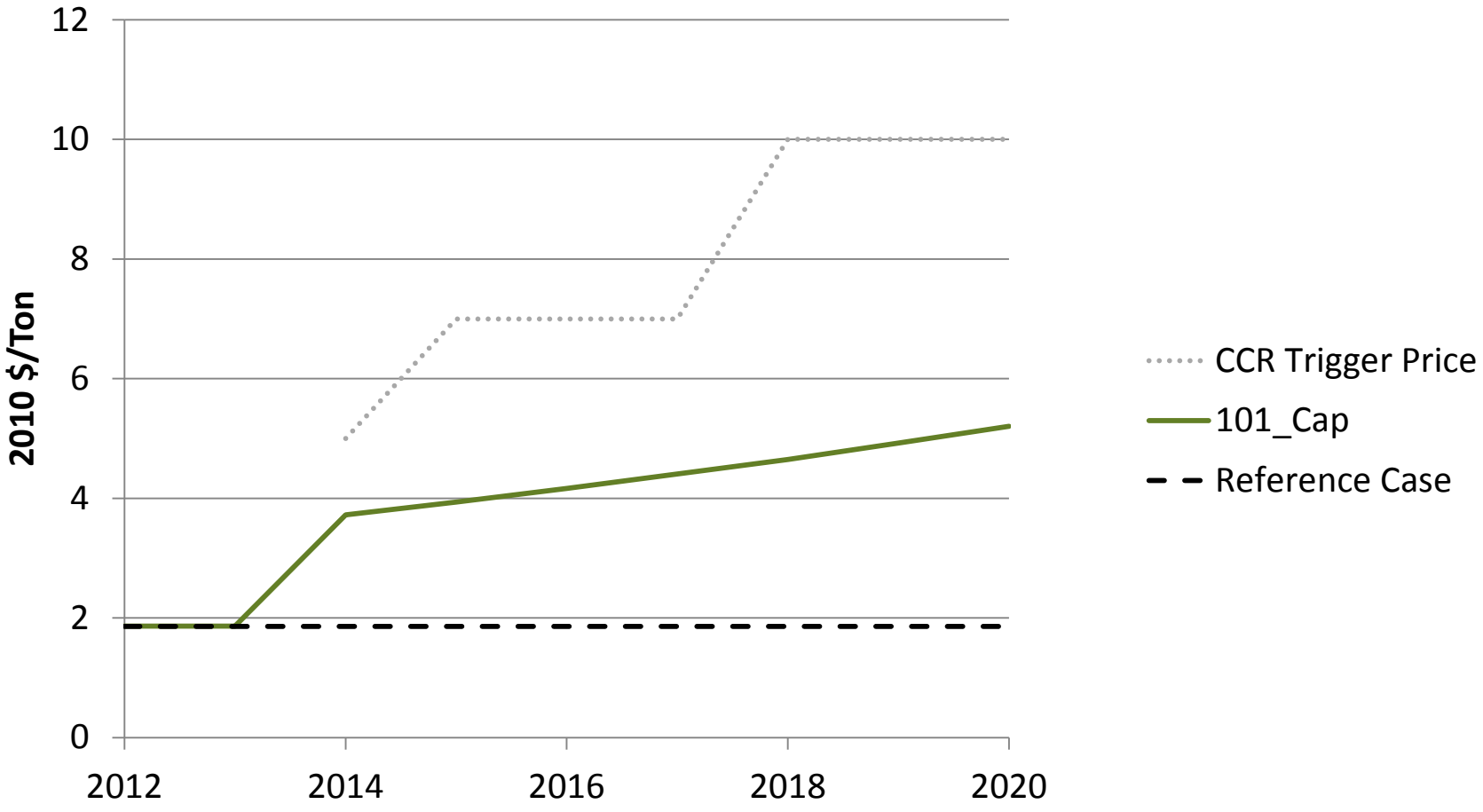
Sources of Emission Reductions *91_Cap*



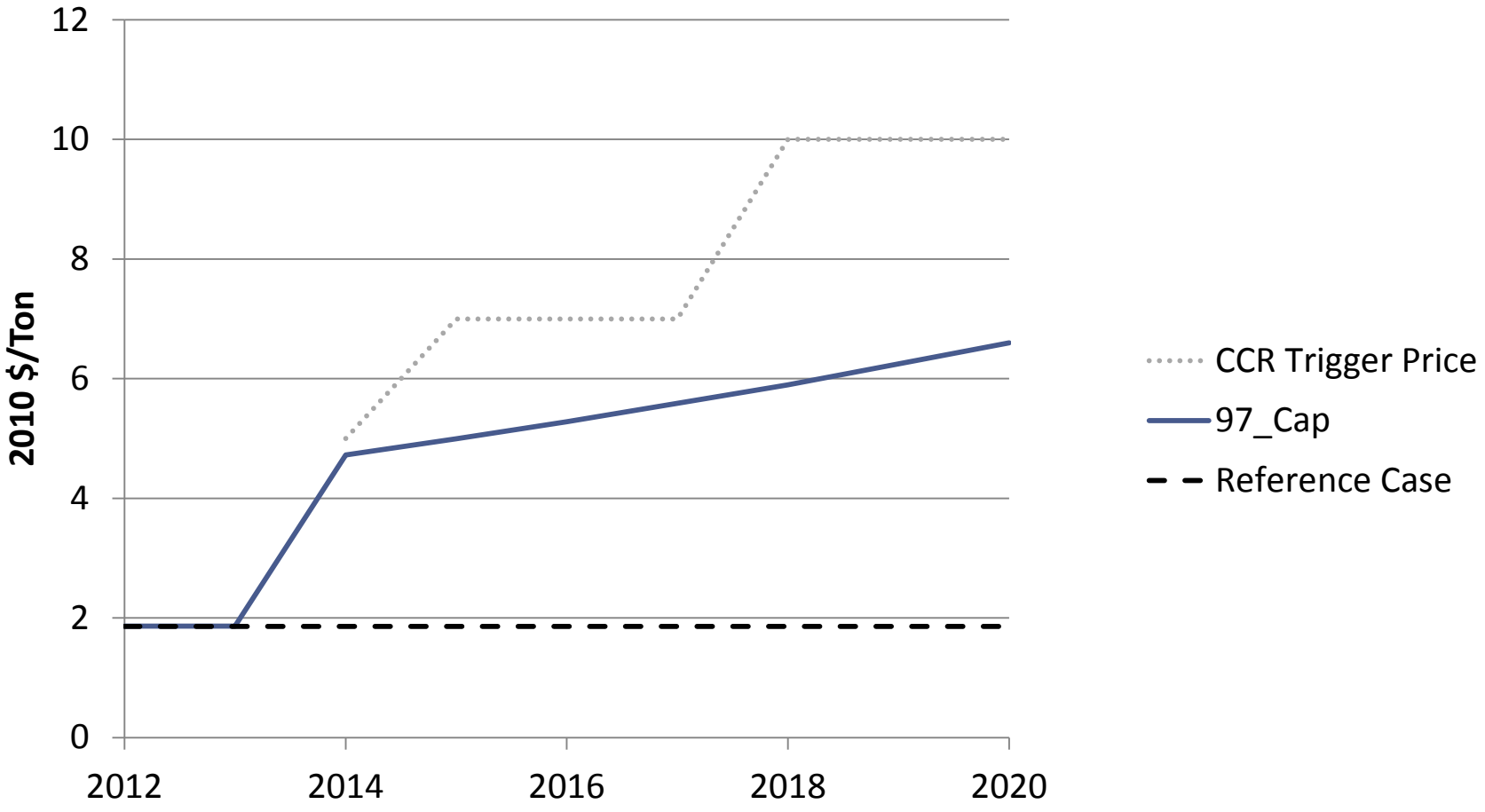
Allowance Prices 106_Cap



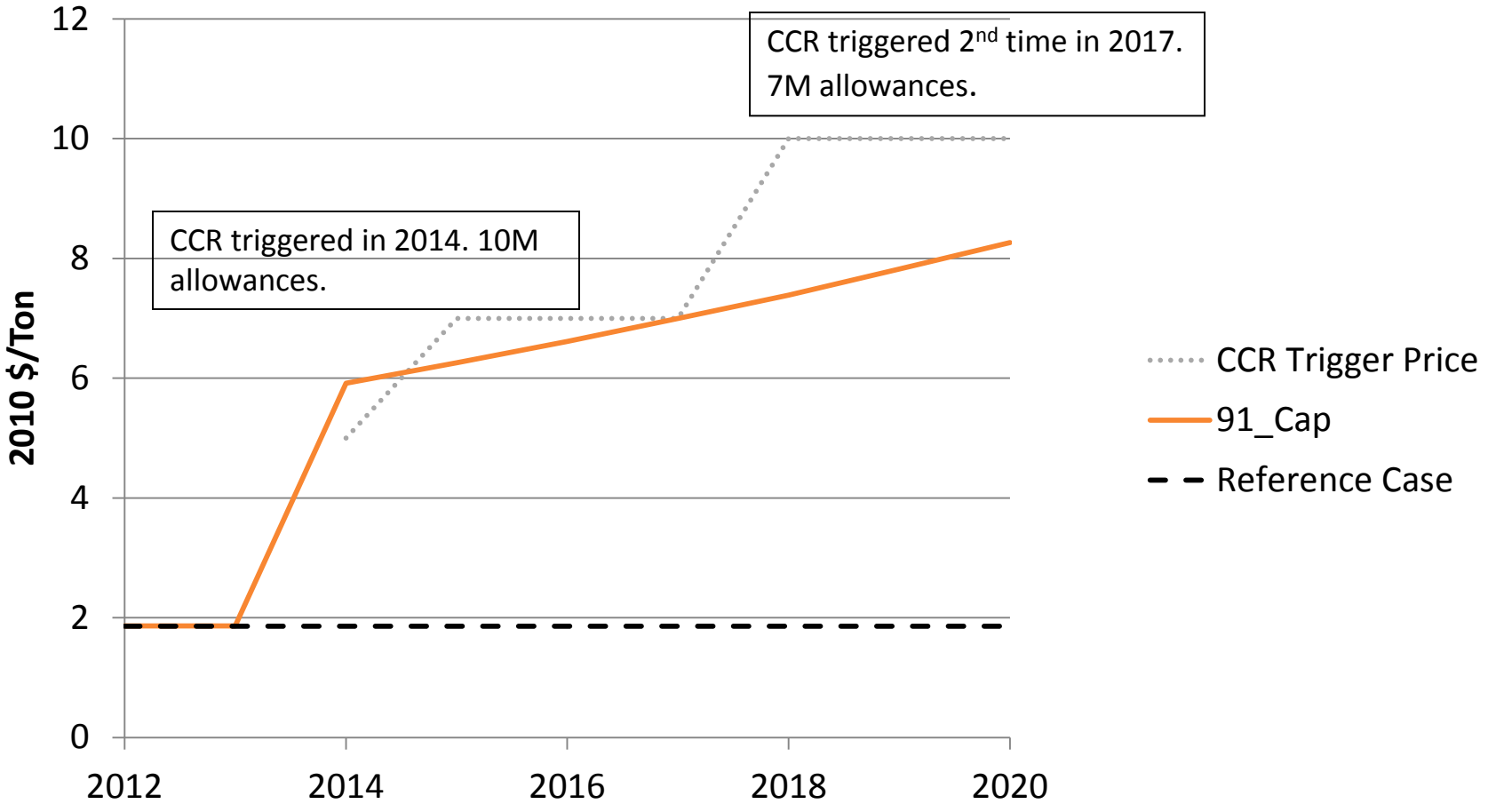
Allowance Prices 101_Cap



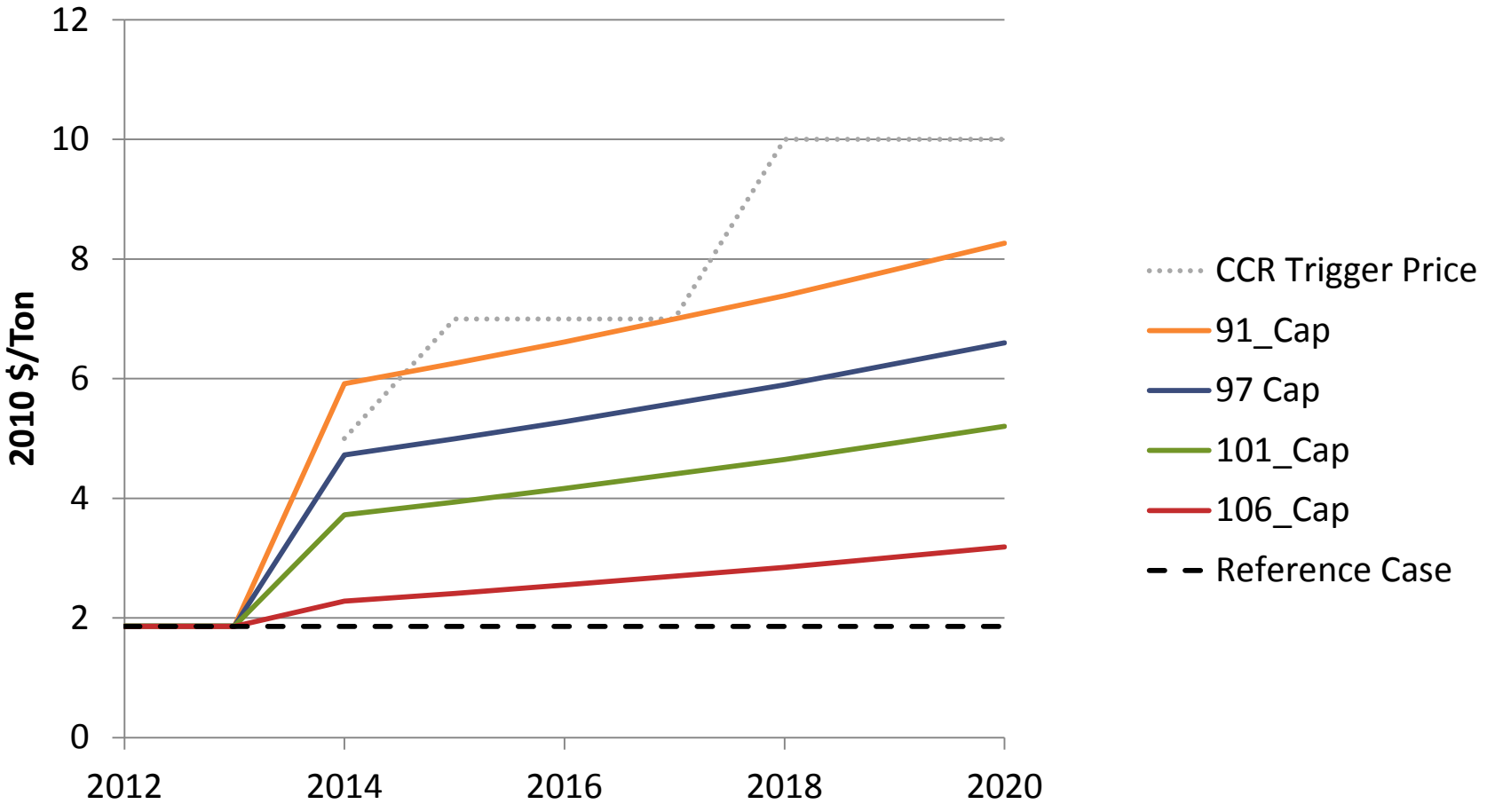
Allowance Prices 97_Cap



Allowance Prices 91_Cap



Allowance Prices Summary



Adjustment for Banked Allowances and Allowance Price Projections

- The modeling assumes a certain number of banked allowances from 2009-2013 and adjusts the 106, 101, 97, and 91 caps perfectly for that amount.

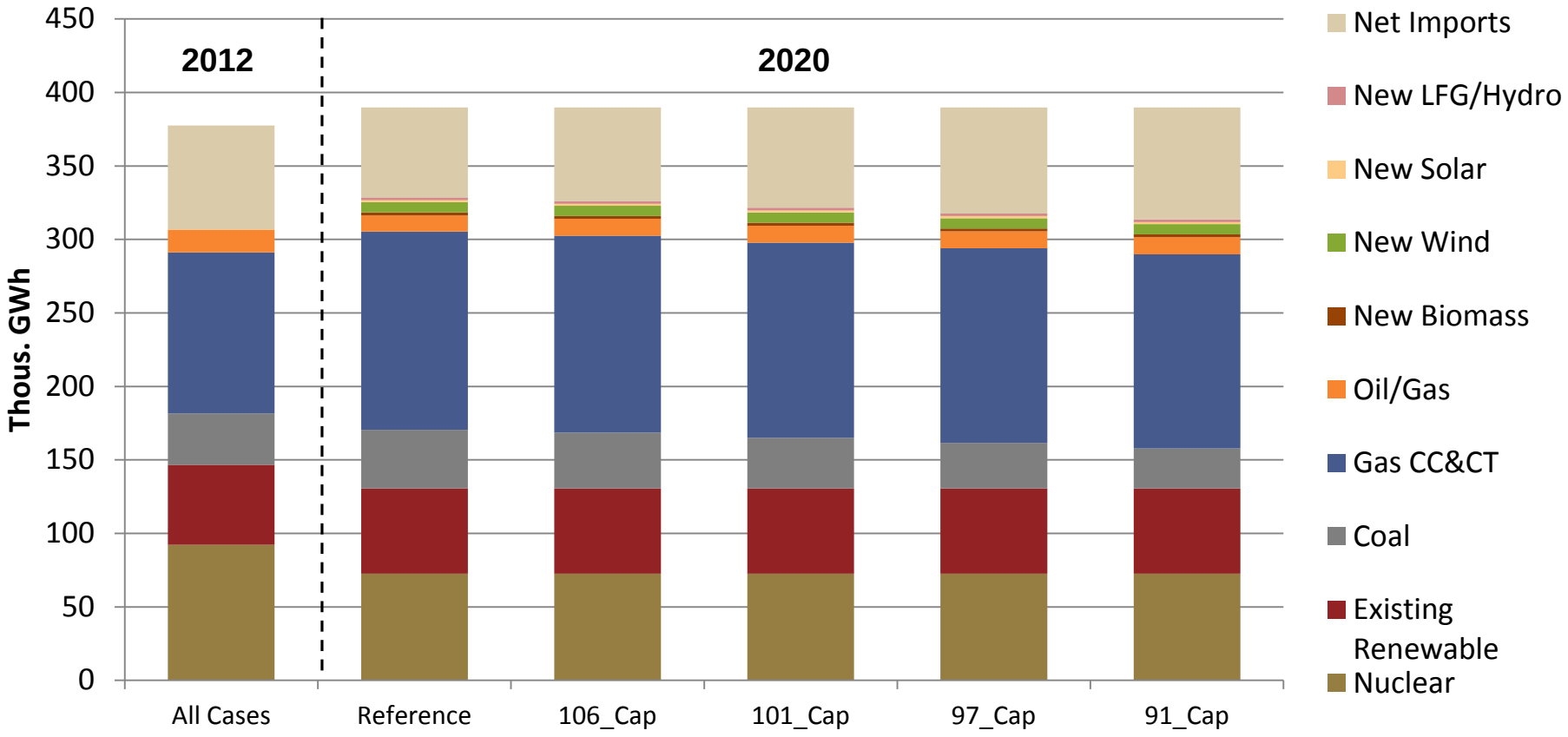
- If the banked allowances from 2009-2013 were a different number, for example 100 M instead of 115 M, and the caps were adjusted perfectly for that amount, the projected allowance price trajectories would not change.

ADDITIONAL RESULTS

Generation Mix for RGGI in 2012 and 2020

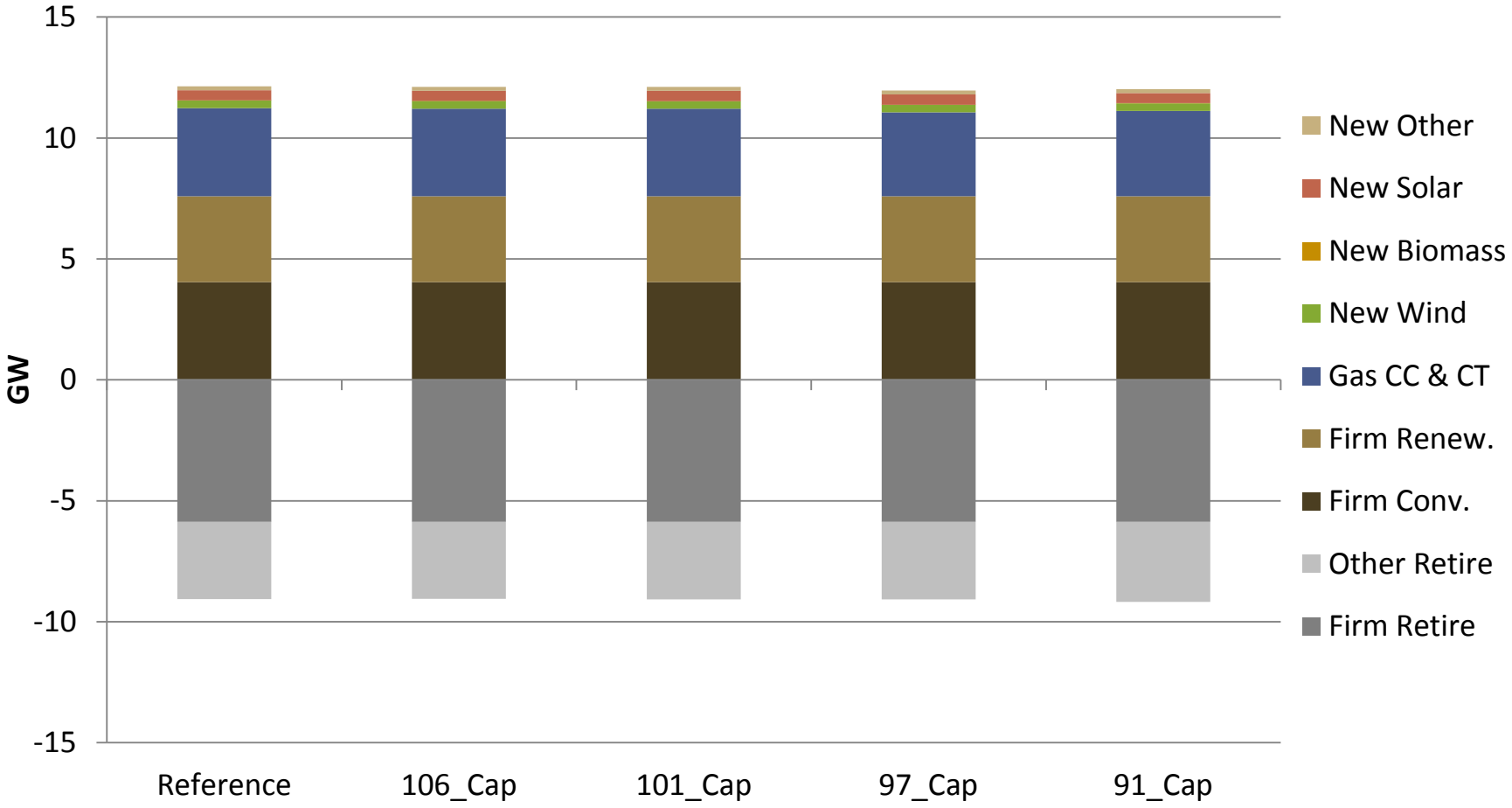
Reference Demand Growth Cases

- The chart shows projected generation by type in the RGGI-affected states. Existing renewable generation represents units that are currently operating and new renewable generation represents generation from both firm and economic renewable builds.



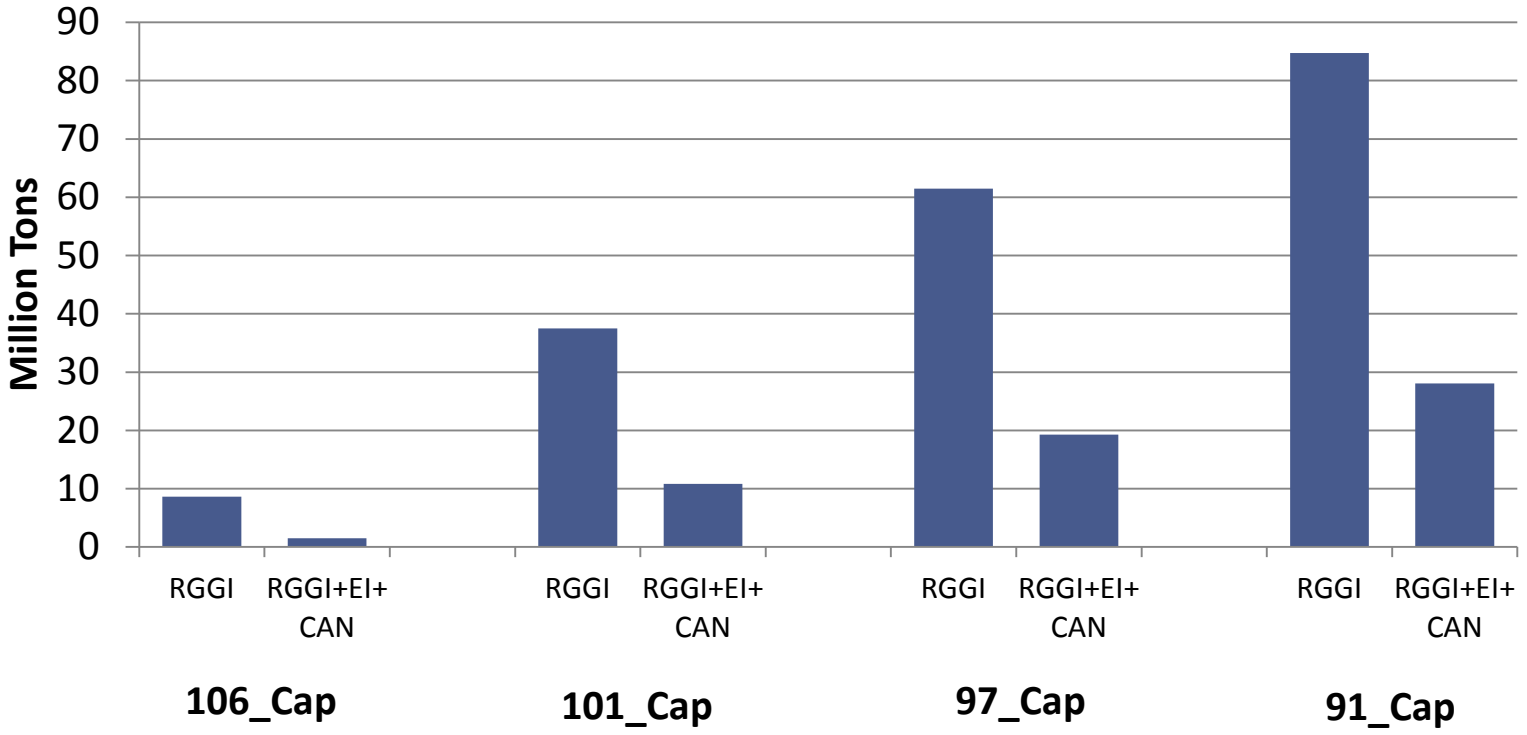
Cumulative Capacity Changes through 2020 in RGGI

- The chart shows IPM projections for total firmly planned capacity additions (Firm Conv. & Firm Renew); economic capacity additions by type; and total retirements (Firm and Other)



Cumulative Emission Reductions from RGGI Sources, 2012 to 2020

Emission reductions for RGGI and the Eastern Interconnect (including RGGI) and eastern Canada (EI+CAN)



- From 2012-2020, Eastern Interconnect emissions are projected to be over 15.2 billion tons
- From 2012-2020, RGGI region emissions are projected to be 879 million tons