

October 24, 2009

# Counting on Allowances - Calculating the Cost of Cap-and-Trade

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**R·W·BECK**

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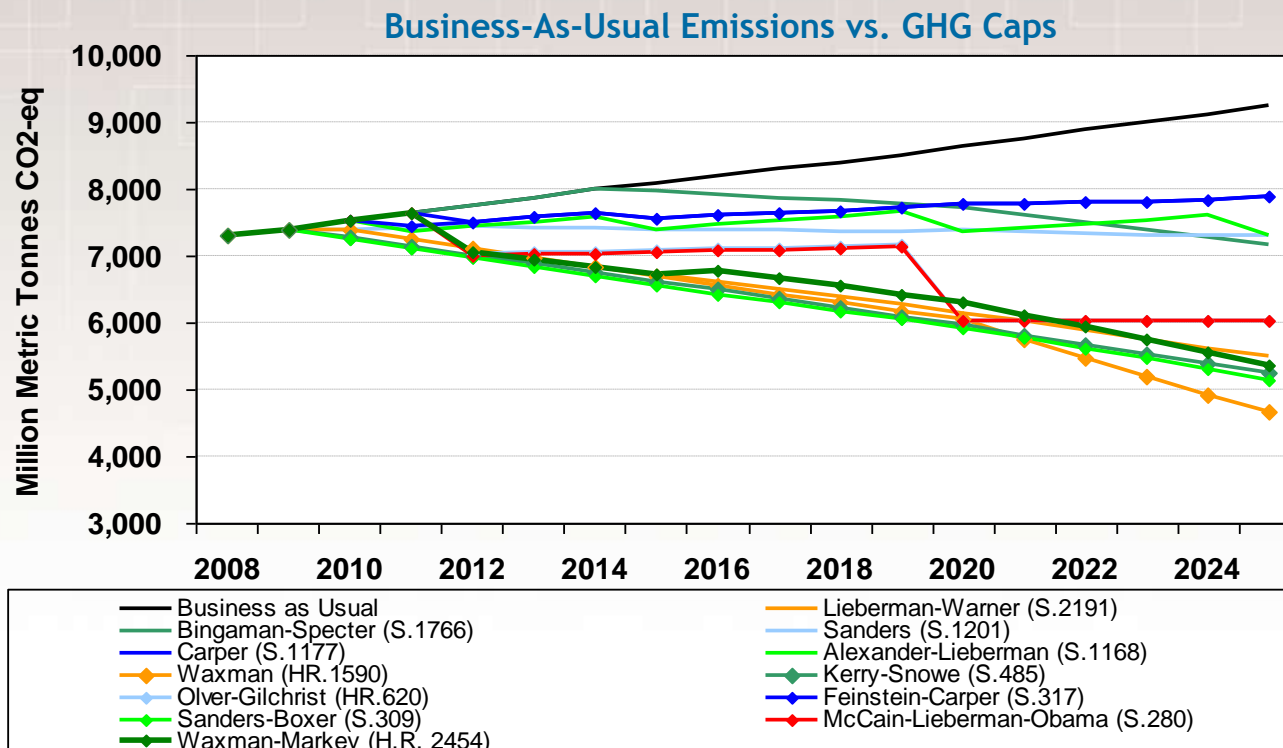


# Overview

- Focus of presentation:
  - Introduction to Waxman-Markey (W-M) greenhouse gas bill
  - Components of free allowance distribution to electric sector
  - IMEA's net allowance exposure with and without certain free allowance provisions
    - 1) Exposure based on allocation terms as passed in House
    - 2) Excluding merchant plant carve-out
    - 3) Excluding new entrant provision
  - Allowance price impact
    - Key terms of W-M bill have significant impact on level of allowance prices
    - Lobby for terms that lower allowance price
  - IMEA net allowance exposure based on current projected allowance prices
    - Potential to reduce net allowance exposure with offsets

# Many greenhouse gas proposals have been put forth over the past few years

- Emission caps for some proposals would cut emissions by more than 80% by 2050
- The Waxman-Markey proposal is currently the leading proposal



# The Waxman-Markey bill includes an economy-wide cap-and-trade program

- The American Clean Energy and Security Act passed in the House June 26, 2009
  - Bill will likely be considered by the Senate early next year
  - Key provisions of House version:
    - **Implementation Year** - 2012
    - **Point of Regulation** - Electricity sources, producers and importers of petroleum-based or coal-based liquid fuel, specified natural gas distributors, specified industrial facilities, chemical manufacturers or industrial fossil fuel-fired combustion devices
    - **Sector Coverage** - Electricity, Transportation, Commercial, Industrial, Residential sectors
    - **Emissions Covered** - Carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, perfluorocarbons, nitrogen trifluoride
    - **Target Reductions** - 3% below the 2005 level beginning 2012, 17% below the 2005 level beginning 2020, and 83% below the 2005 level beginning 2050

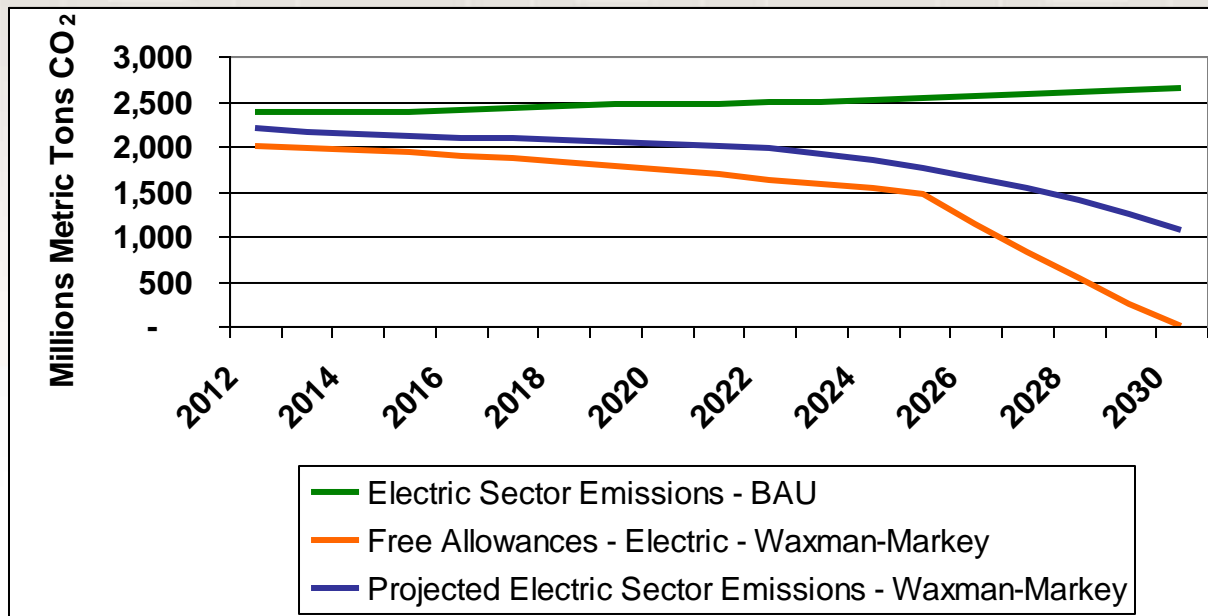
# The bill includes fairly generous free allowance allocations

- Key Provisions (Cont'd):
  - **Electric Sector Allowance Allocations** - 43.75% decreasing to 7% by 2029. Includes LDC's, long-term contract carve-out, and merchant coal generator carve-out; for benefit of consumers only
  - **Offsets** - Up to 2 billion tons of offsets allowed annually; 1.25 international offsets required for each ton of emissions; 1 domestic
  - **Banking/Borrowing** - Unlimited banking; 15% of requirements borrowing - 1 year ahead without penalty; 2-5 years ahead with penalty
  - **Performance Standards** - Permitted 1/1/2009 - 12/31/2019 50% CO<sub>2</sub> reduction; after 12/31/2019 65% CO<sub>2</sub> reduction
  - **Renewable Portfolio Standards** - 6% in 2012 increasing to 20% by 2020; targets can be met with any combination of RPS and energy efficiency

# However, free allowances alone are not enough to cover the gap for the electric sector

- Initial free allowance allocations under W-M would cover approx. 80% of 2012 emissions; the percentage declines to approximately 58% by 2025 and 0% by 2030
  - Displacement and retirement of fossil-fueled generation will also reduce emissions

Business-As-Usual Electric Sector Projected CO<sub>2</sub> Emissions vs. Emissions and Free Allowances Under Waxman-Markey



# Allowances must be used exclusively for the benefit of retail ratepayers under W-M

- Most greenhouse gas proposals prior to Waxman-Markey directly provided generators with free allowances
- Requirement per Waxman-Markey Legislation:
  - “Allowances may not be used to support electricity sales to entities or persons other than such ratepayers
  - An electric local distribution must ensure that ratepayer benefits are distributed -
    - Among ratepayer classes ratably based on electricity deliveries to each class; and
    - Equitably among individual ratepayers within each ratepayer class”

# Free allowances allocated to the electric sector are separated in three categories

- Allocations are made to merchant coal generators and to owners of long-term contracts without pass-through provisions before electric LDCs
- Allocations to electric LDCs are based 50% on sales and 50% on emissions

Allowance Year	Millions of Tons							
	Allowance Cap	Strategic Reserve	Cap Net of Strategic Reserve	Allocation % To Electric Sector	Allowances To Electric Sector	Merchant Coal Distribution	Long-Term Contract Distribution	Allowances Available to Electric LDC
2012	4,627	46	4,581	43.75%	2,004	200	86	1,717
2013	4,544	45	4,499	43.75%	1,968	197	85	1,687
2014	5,099	51	5,048	38.89%	1,963	196	84	1,682
2015	5,003	50	4,953	38.89%	1,926	193	83	1,651
2016	5,482	55	5,427	35.00%	1,900	190	82	1,628
2017	5,375	54	5,321	35.00%	1,862	186	80	1,596
2018	5,269	53	5,216	35.00%	1,826	183	79	1,565
2019	5,162	52	5,110	35.00%	1,789	179	77	1,533
2020	5,056	101	4,955	35.00%	1,734	173	75	1,486
2021	4,903	98	4,805	35.00%	1,682	168	72	1,441
2022	4,751	95	4,656	35.00%	1,630	163	70	1,397
2023	4,599	92	4,507	35.00%	1,577	158	68	1,352
2024	4,446	89	4,357	35.00%	1,525	152	66	1,307
2025	4,294	86	4,208	35.00%	1,473	147	63	1,262
2026	4,142	83	4,059	28.00%	1,137	114	49	974
2027	3,990	80	3,910	21.00%	821	82	35	704
2028	3,837	77	3,760	14.00%	526	53	23	451
2029	3,685	74	3,611	7.00%	253	25	11	217
2030	3,533	106	3,427	0.00%	-	-	-	-

# Free allowances related to IMEA's generation are based on the following assumptions

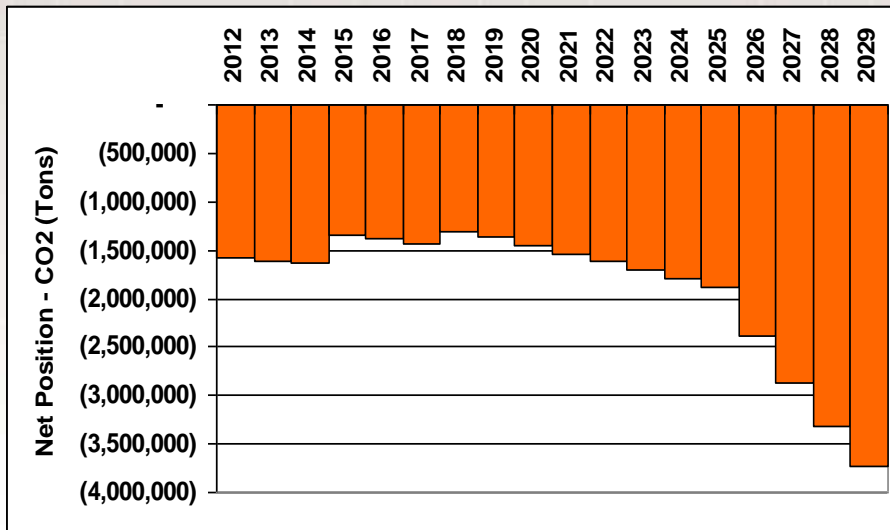
- New capacity associated with Trimble County 2 and Prairie State were included in cases with new entrant assumptions

Illinois Municipal Electric Agency Baseload Resources								
Unit	Total Capacity	IMEA Capacity	Cap. Factor	Heat Rate (Btu/kWh)	Net Gen (MWh)	Heat Content (Btu/lb)	Coal Burned (Tons)	CO2 Emitted (Tons)
Trimble County 1	512	62	88%	10,250	477,946	11,000	222,679	465,400
Trimble County 2	751	91	88%	9,000	701,501	10,400	303,534	612,127
Prairie State 1	791	120	88%	9,350	925,056	8,800	491,436	991,063
Prairie State 1	791	<u>120</u>	88%	9,350	<u>925,056</u>	8,800	<u>491,436</u>	<u>991,063</u>
<b>Subtotal</b>		<b>393</b>			<b>3,029,558</b>		<b>1,509,085</b>	<b>3,059,652</b>
<b>Ameren Illinois Fleet</b>								
Coffeen 1	340	17	80%	10,250	117,341	9,000	66,819	134,753
Cofeen 2	560	28	80%	10,250	193,268	9,000	110,056	221,945
Hutsonville 3	77	4	50%	10,500	16,609	9,000	9,689	19,539
Hutsonville 4	76	4	50%	10,500	16,393	9,000	9,563	19,285
Meredosa 1	62	3	30%	14,000	8,024	9,000	6,241	12,586
Meredosa 2	62	3	30%	14,000	8,024	9,000	6,241	12,586
Meredosa 3	203	10	40%	10,700	35,030	9,000	20,823	41,994
Newton 1	557	27	80%	10,400	192,233	10,000	99,961	201,588
Newton 2	569	28	80%	10,400	196,374	10,000	102,115	205,931
Joppa Steam	200	10	89%	10,000	76,790	10,000	38,395	77,430
Duck Creek	355	17	85%	10,000	130,176	9,000	72,320	145,845
Edwards 1	107	5	85%	10,200	39,236	9,000	22,234	44,838
Edwards 2	273	13	85%	10,200	100,107	9,000	56,727	114,400
Edwards 3	365	<u>18</u>	85%	10,200	<u>133,843</u>	9,000	<u>75,844</u>	<u>152,952</u>
<b>Subtotal</b>		<b>187</b>			<b>1,263,448</b>		<b>697,027</b>	<b>1,405,671</b>
AEM Gas/Oil Units	<u>1,270</u>	<u>63</u>	20%	11,000	109,616	22,000	27,404	70,337
<b>Total Capacity</b>	<b>5,076</b>	<b>250</b>						

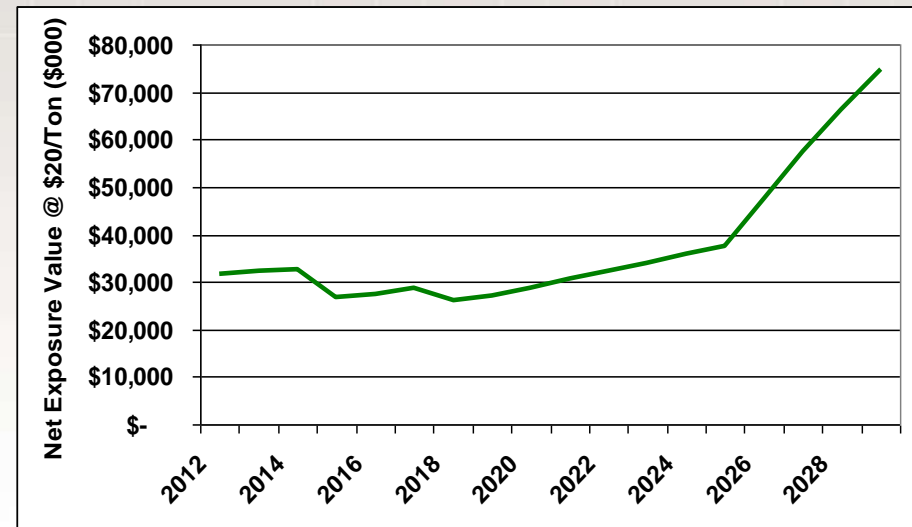
# Allocation provisions provided in the House bill provide net allowance exposure to IMEA, but...

- ...Provisions to include new entrants help increase the number of free allowances that apply to IMEA's generation
  - Assuming that LDC's can pass along free allowances to lower energy costs, IMEA's net exposure at \$20/ton starts at \$32M and rises to over \$75M by 2029

Net Allowance Exposure (Tons)



IMEA Allowance Cost @ \$20/Ton (\$000)

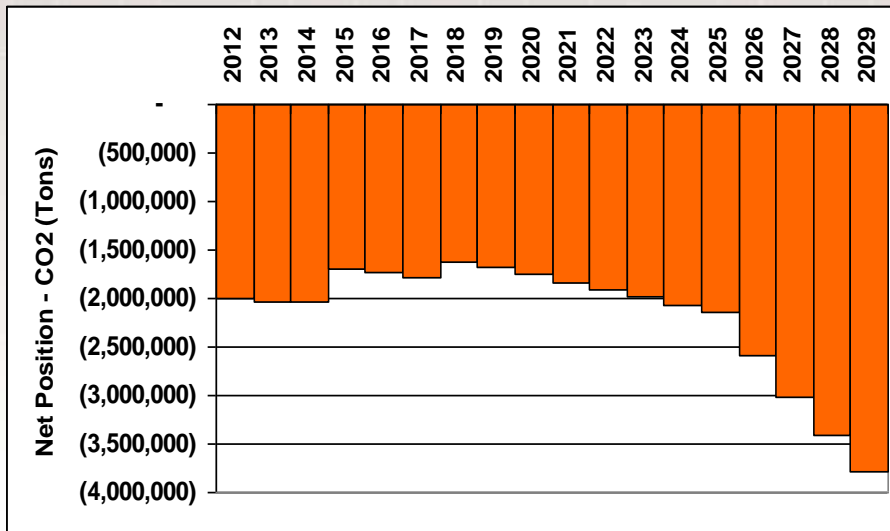


\$/MWh	2012-2017	2018-2025	2026-2030
Net Exposure w/Free Allowances	\$ 6.99	\$ 7.38	\$ 14.39

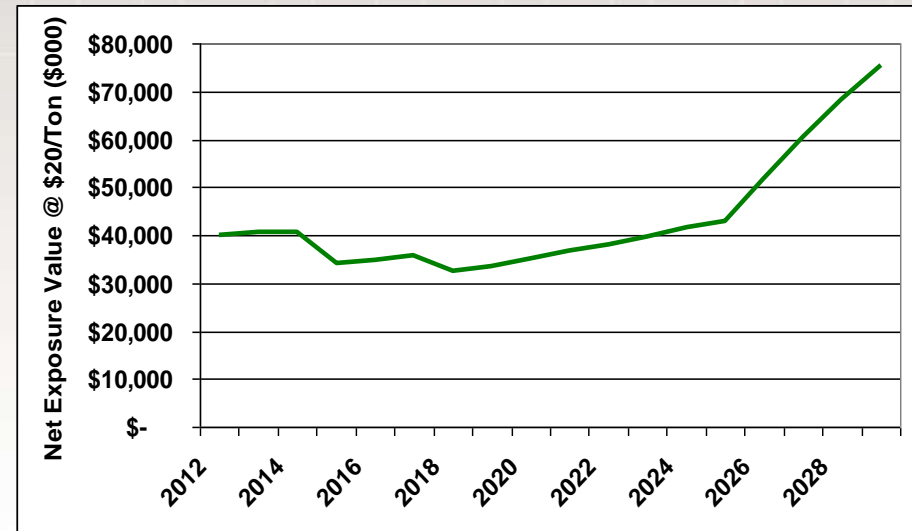
# Excluding allocations to merchant coal plants would increase IMEA's exposure

- Ameren's merchant coal allocation would provided the benefits of more free allowances to IMEA than if the merchant carve-out were removed
  - IMEA's net exposure at \$20/ton starts at \$40M and rises to over \$76M by 2029

Net Allowance Exposure (Tons)



IMEA Allowance Cost @ \$20/Ton (\$000)

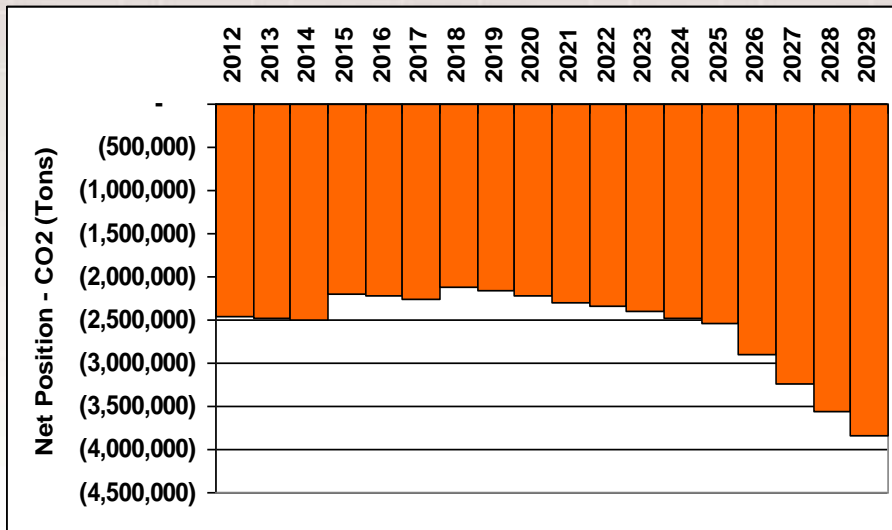


\$/MWh	2012-2017	2018-2025	2026-2030
Net Exposure w/Free Allowances	\$ 8.79	\$ 8.76	\$ 14.97

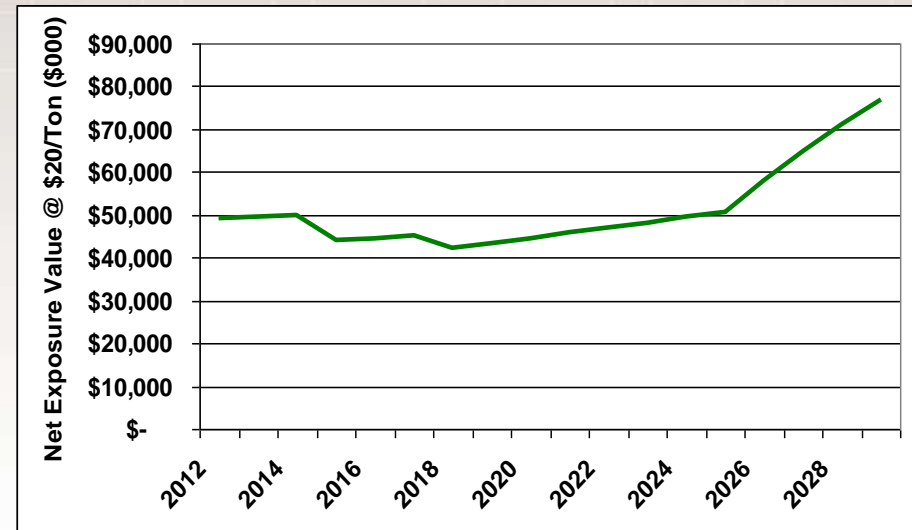
# The new entrant provision provides allowance benefits to owners of new coal capacity

- Trimble County 2 and Prairie State would provide an estimated 880,000 allowances in the first year to LDCs that sell energy from these plants
  - The graphs below show IMEA's projected net position if the new entrant provision were excluded

Net Allowance Exposure (Tons)



IMEA Allowance Cost @ \$20/Ton (\$000)

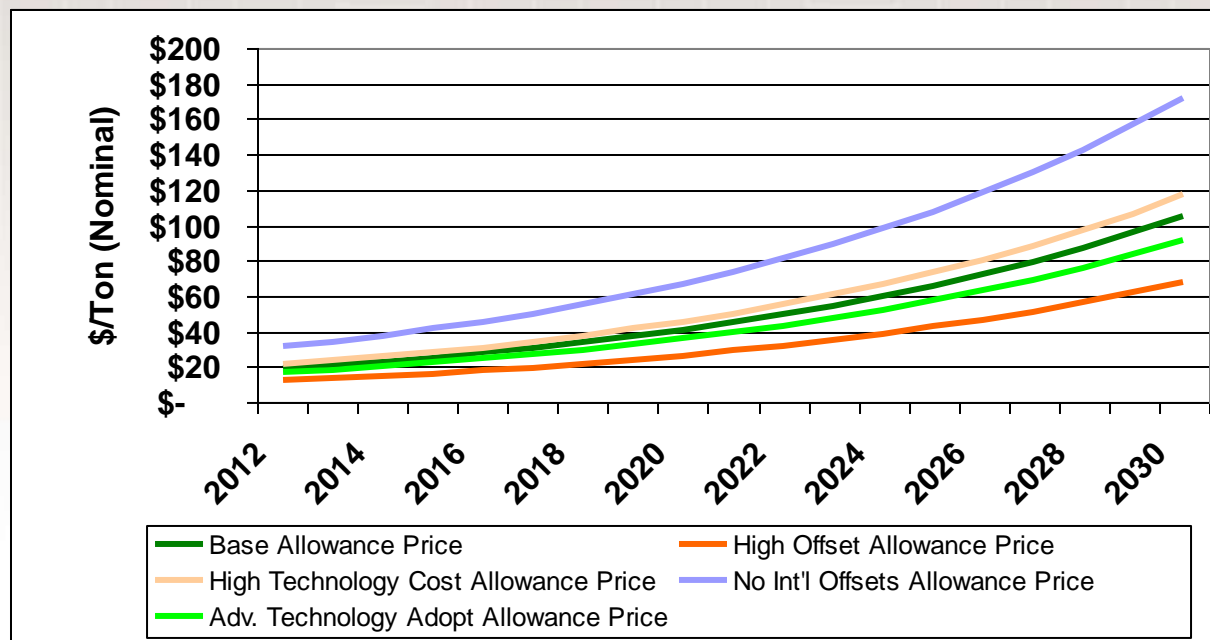


\$/MWh	2012-2017	2018-2025	2026-2030
Net Exposure w/Free Allowances	\$ 10.99	\$ 10.84	\$ 15.82

# Allowance prices are uncertain, but highly dependent on the terms of GHG proposals

- Emission caps, offsets and technology adoption (timing and costs) are primary drivers of allowance price levels
  - It will be critical to lobby for higher caps (near-term), more offsets and funding for carbon capture and sequestration advancement and low carbon technologies

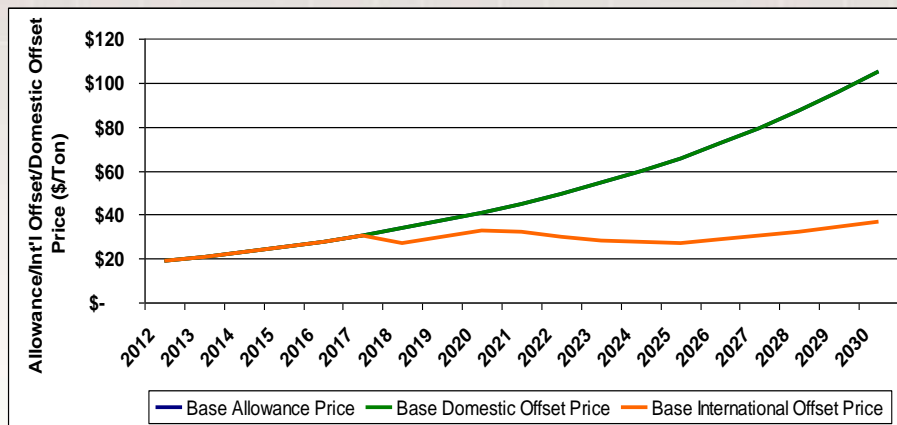
Waxman-Markey Allowance Prices



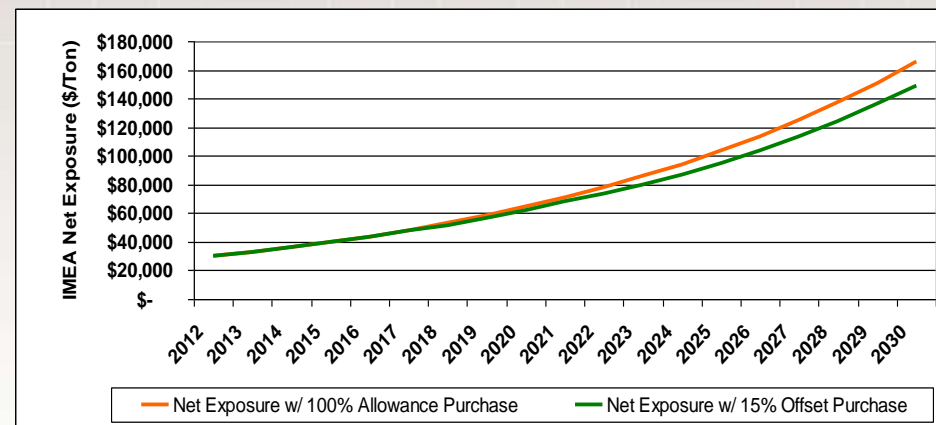
# Offsets can help reduce IMEA's emission costs in later years, but not significantly

- Offset supply in the near-term is expected to be low leading to offset prices equal to allowance prices
  - Projected larger supplies of international offsets in later years may cause offset prices to be lower than allowance prices, but the difference will likely be small

Waxman-Markey Allowance/Offset Prices



IMEA Net Exposure w-w/o Offsets



Net Exposure (\$000)	2012-2017	2018-2025	2026-2030
Allowance Exposure -100%	\$ 231,242	\$ 608,677	\$ 692,458
Allowance Exposure -15% Offsets	\$ 231,242	\$ 572,589	\$ 626,864
Savings Thru Offset Purchase	\$ -	\$ 36,088	\$ 65,594

Net Exposure (\$/MWh)	2012-2017	2018-2025	2026-2030
Allowance Exposure -100%	\$ 9.00	\$ 17.77	\$ 32.35
Allowance Exposure -15% Offsets	\$ 9.00	\$ 16.72	\$ 29.29
Savings Thru Offset Purchase	\$ -	\$ 1.05	\$ 3.06

# Summary

- Waxman-Market bill, passed in the House in June 2009, is currently the leading greenhouse gas bill
- Electric sector would receive a generous share of free allowance
  - IMEA would benefit from new entrant provisions and merchant generator carve-out
  - Lobbying to maintain these provisions and relatively high allocation percentage is critical to minimize exposure
- Allowance price levels under any program are uncertain, but can be influenced by Lobbying for certain terms
  - Higher near-term caps
  - More offset programs and ability to use more to meet compliance
  - Increased funding for clean technology and carbon capture and sequestration research

# Questions

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