

# Colorado's Greenhouse Gas Inventory

2013 Update  
including Projections to 2020 & 2050



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of Public Health  
and Environment

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# Overview

- Process To Develop Inventory
- Layout of the Document
- Results
- Next Steps

# Process To Develop Inventory

- Top-down approach
- Detailed description of the methodology used
- State Inventory Tool (SIT) – model used
  - Links major national data bases to calculation schemes
  - Has consistency with other states
  - Follows the international GHG protocol the U.S. agreed to follow for the national inventory
  - Allows for customization of emission factors and activity assumptions
  - Was updated by EPA in 2013 to improve the process using latest assumptions

# Process To Develop Inventory

- Draft relies solely on SIT Model default values
- SIT Model allows customization to either better reflect Colorado's emissions or test alternative scenarios
- As a general rule inventory presents data as organized by model, but limited reorganization done to provide a more cohesive sector based analysis of GHG emissions in Colorado

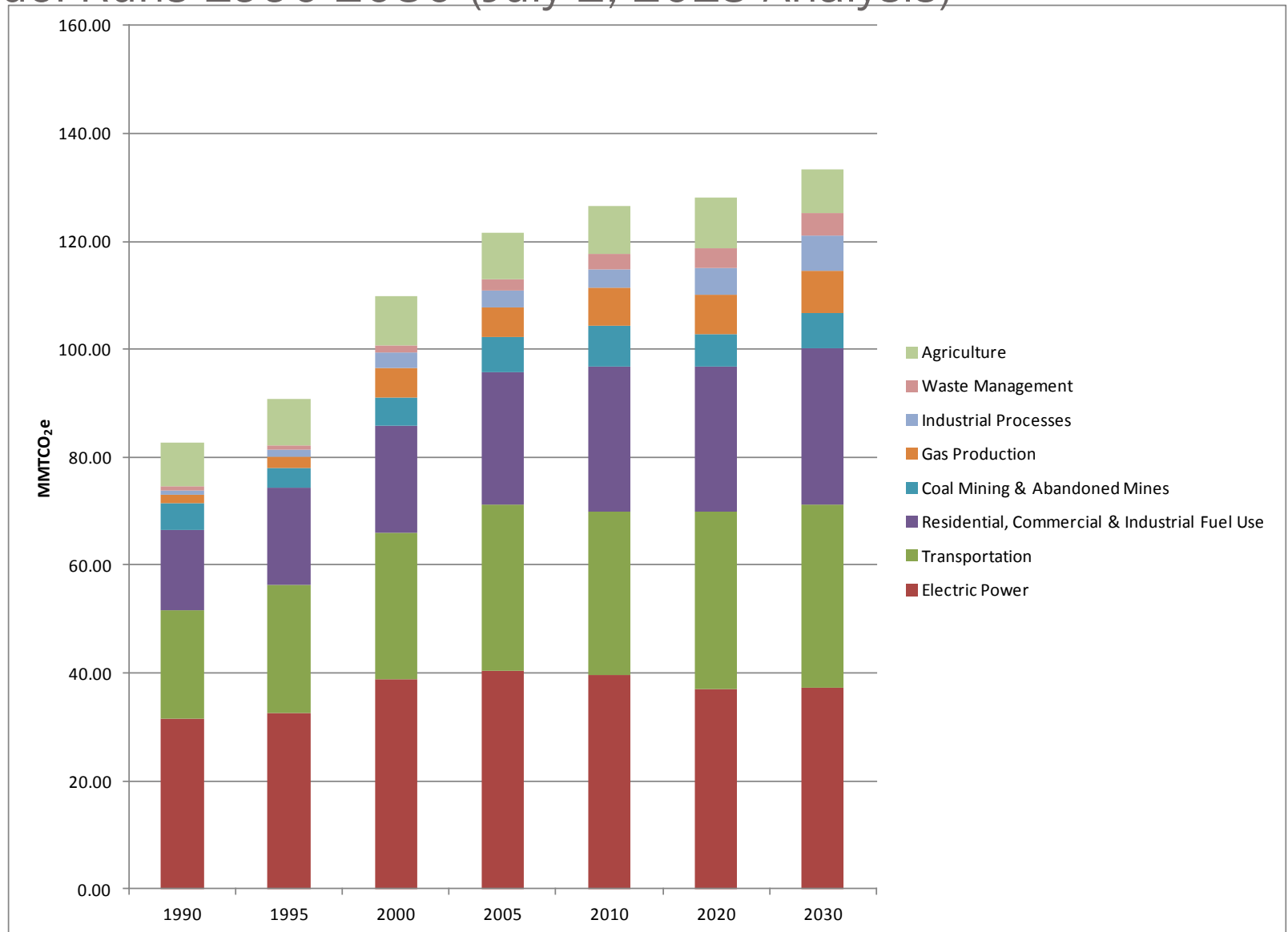
# Layout of the Document

- Executive Summary
- Synthesis Chapter
  - Summarizes the results from entire model for the period from 1990-2010
- Projection Chapter
  - Summarizes the results from the projection module (2010-2030)
- Individual Chapters for Each Sector

# Sectors

- Electrical Power
- Residential, Commercial, Industrial (RCI) Fuel Use
- Industrial Processes
- Coal Mining and Abandoned Mines
- Gas Production
- Agriculture
- Waste Management
- Land Use and Forestry

# Summary of Colorado GHG Emissions by emission sector SIT Model Runs 1990-2030 (July 2, 2013 Analysis)



## Summary of Colorado GHG Emissions by emission sector SIT Model Runs 1990-2030 (July 2, 2013 Analysis)

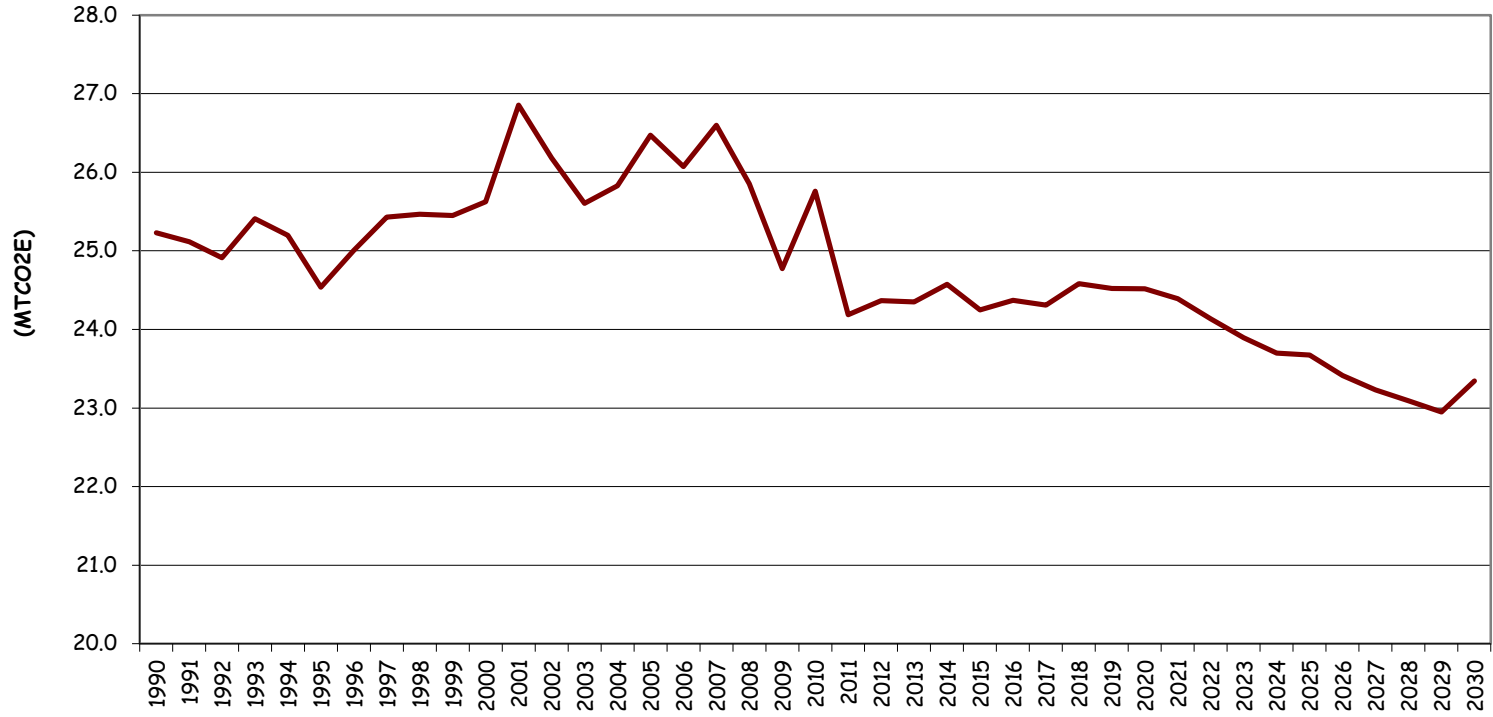
	1990	1995	2000	2005	2010	2020	2030
Electric Power	31.43	32.66	38.83	40.29	39.53	37.06	37.36
Transportation	20.11	23.73	27.02	30.88	30.47	32.95	33.71
Residential, Commercial & Industrial Fuel Use	15.01	17.87	19.96	24.50	26.81	26.77	29.10
Coal Mining & Abandoned Mines	4.81	3.73	5.32	6.61	7.54	5.96	6.60
Gas Production	1.72	2.00	5.39	5.47	6.98	7.47	7.89
Industrial Processes	0.72	1.41	2.94	3.16	3.58	4.89	6.28
Waste Management	0.81	0.80	1.29	1.97	2.62	3.73	4.20
Agriculture	8.14	8.44	9.14	8.77	9.04	9.24	8.25
<b>Grand Total</b>	<b>82.74</b>	<b>90.65</b>	<b>109.88</b>	<b>121.65</b>	<b>126.57</b>	<b>128.06</b>	<b>133.38</b>
Electricity Consumption	N/A	N/A	38.75	43.55	48.32	62.12	70.04
Land Use & Forestry	-11.64	-10.53	-10.96	-10.97	-8.99	N/A	N/A



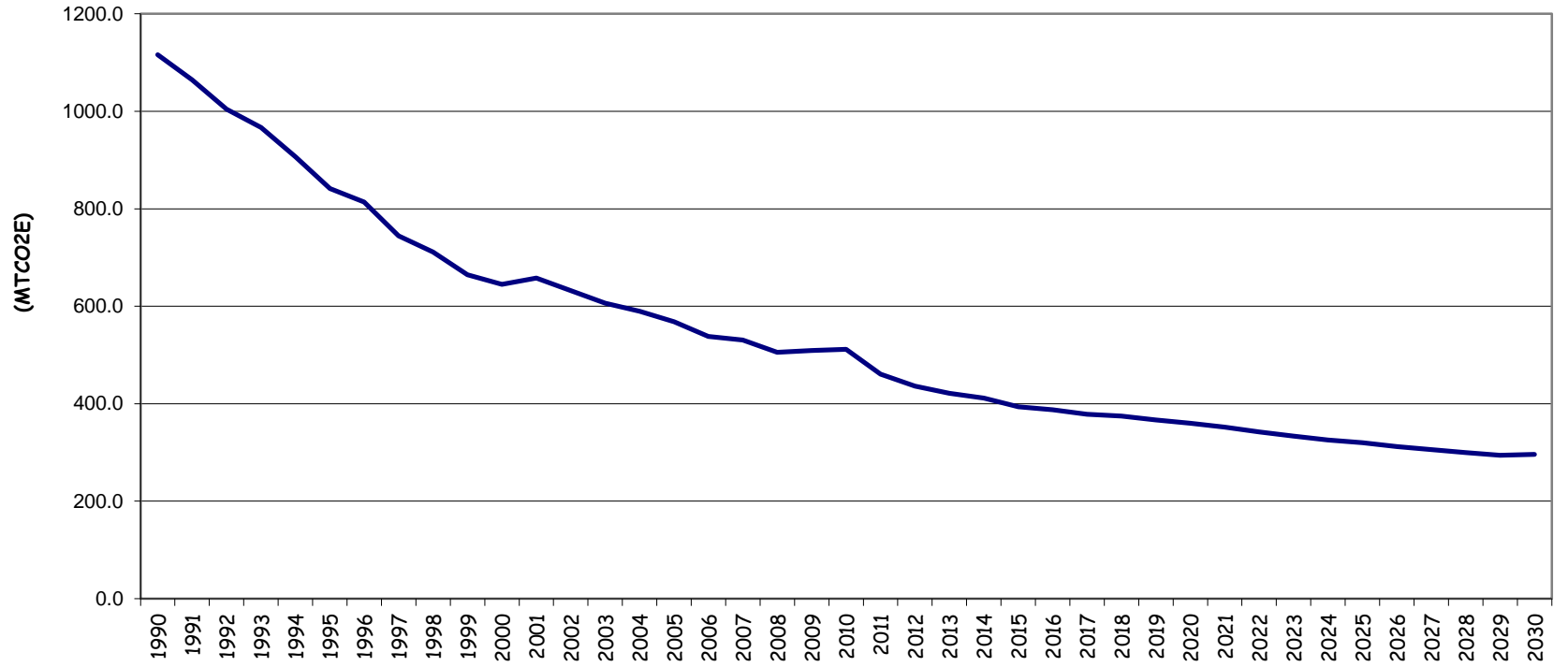
# Summary of Past and Projected GHG Emissions by Gas in Colorado (MMTCO<sub>2</sub>e)

	1990	1995	2000	2005	2010	2020	2030
<b>CO<sub>2</sub></b>							
CO <sub>2</sub> from Fossil Fuel Combustion	65.33	72.68	84.17	94.38	95.99	96.44	99.78
Industrial Processes	0.36	0.64	1.47	1.33	1.44	1.64	2.05
Waste Combustion and Landfills	0.11	0.16	0.17	0.20	0.20	0.26	0.30
<b>Total Emissions</b>	<b>65.8</b>	<b>73.48</b>	<b>85.81</b>	<b>95.91</b>	<b>97.63</b>	<b>98.34</b>	<b>102.13</b>
<b>CH<sub>4</sub></b>							
Stationary Combustion	0.08	0.08	0.09	0.09	0.09	0.04	0.04
Mobile Combustion	0.09	0.1	0.08	0.06	0.04	0.03	0.03
Coal Mining & Abandoned Mines	4.81	3.73	5.32	6.61	7.54	5.96	6.6
Natural Gas and Oil Systems	1.72	2	5.39	5.47	6.98	7.47	7.89
Enteric Fermentation	3.87	4.32	4.61	4.52	4.95	5.33	4.64
Manure Management	0.38	0.51	0.71	0.75	0.87	0.75	0.77
Rice Cultivation	-	-	-	-	-	-	-
Burning of Agricultural Crop Waste	0.009	0.009	0.009	0.009	0.012	0.004	0.004
Waste Combustion and Landfills	0.61	0.53	0.94	1.58	2.19	2.83	3.18
Wastewater	0.26	0.3	0.35	0.36	0.39	0.46	0.53
<b>Total Emissions</b>	<b>11.83</b>	<b>11.58</b>	<b>17.50</b>	<b>19.45</b>	<b>23.06</b>	<b>22.87</b>	<b>23.68</b>
<b>N<sub>2</sub>O</b>							
Stationary Combustion	0.17	0.18	0.21	0.21	0.21	0.19	0.19
Mobile Combustion	0.87	1.22	1.26	0.92	0.48	0.33	0.31
Industrial Processes	-	-	-	-	-	-	-
Manure Management	0.43	0.48	0.57	0.53	0.51	0.53	0.48
Agricultural Soil Management	3.45	3.12	3.24	2.96	2.68	2.63	2.35
Burning of Agricultural Crop Waste	0.003	0.003	0.003	0.003	0.004	0.002	0.002
Waste Combustion and Landfills	0.01	0.01	0.01	0.01	0.01	0.01	0
Wastewater	0.09	0.11	0.13	0.14	0.15	0.18	0.22
<b>Total Emissions</b>	<b>5.02</b>	<b>5.12</b>	<b>5.42</b>	<b>4.77</b>	<b>4.04</b>	<b>3.87</b>	<b>3.55</b>
<b>HFC ,PFC ,and SF<sub>6</sub></b>							
Industrial Processes	0.72	0.77	1.47	1.83	2.14	3.25	4.23
<b>GRAND TOTAL</b>	<b>83.37</b>	<b>90.95</b>	<b>110.20</b>	<b>121.96</b>	<b>126.88</b>	<b>128.34</b>	<b>133.60</b>
<b>Electricity Consumption Emissions (CO<sub>2</sub> Eq.)</b>	<b>27.73</b>	<b>31.81</b>	<b>38.75</b>	<b>43.55</b>	<b>48.32</b>	<b>62.12</b>	<b>70.04</b>
<b>LULUCF</b>	<b>-11.64</b>	<b>-10.53</b>	<b>-10.96</b>	<b>-10.97</b>	<b>-8.99</b>	<b>N/A</b>	<b>N/A</b>

Gross GHG Emissions Per Capita, 1990-2030



Gross GHG Emissions per GSP, 1990-2030



# Next Steps

- Accepting Comments on the Draft Inventory until January 31, 2014
  - Posted on the APCD's website
  - E-mail comments to Theresa.Takushi@state.co.us
- Determine if any modifications need to be made
- Make edits as appropriate
- Issue a final document