



2022 Mercury Emissions Inventory Update

2023 Statewide Mercury TMDL Oversight Committee Meeting

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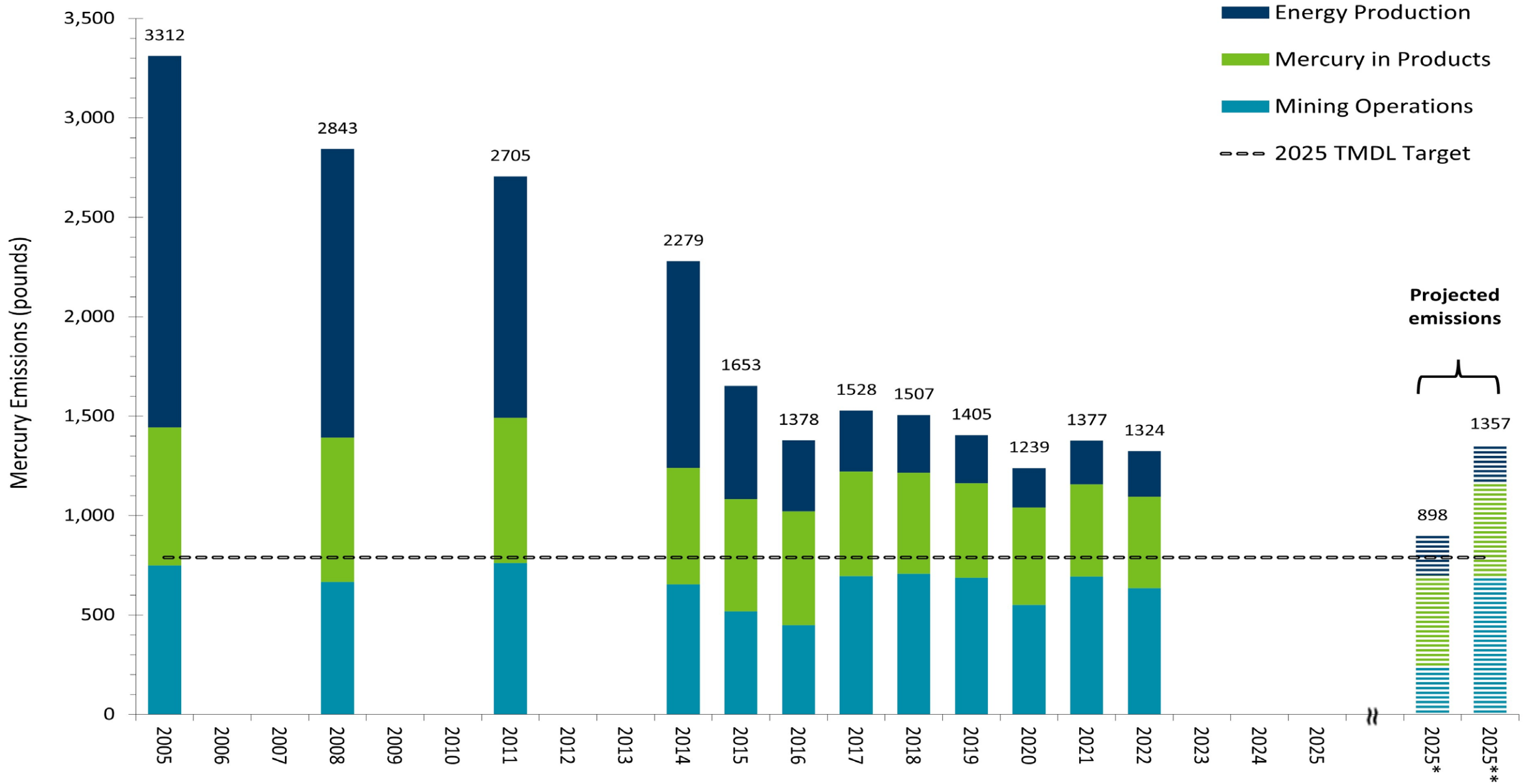
September 21, 2023

Overview

- Mercury emission inventory (2020-2022)
- 2025 mercury emission projections
- In-depth mercury emissions inventory review
- EPA's National Emissions Inventory
- Moving forward
- Questions and answers

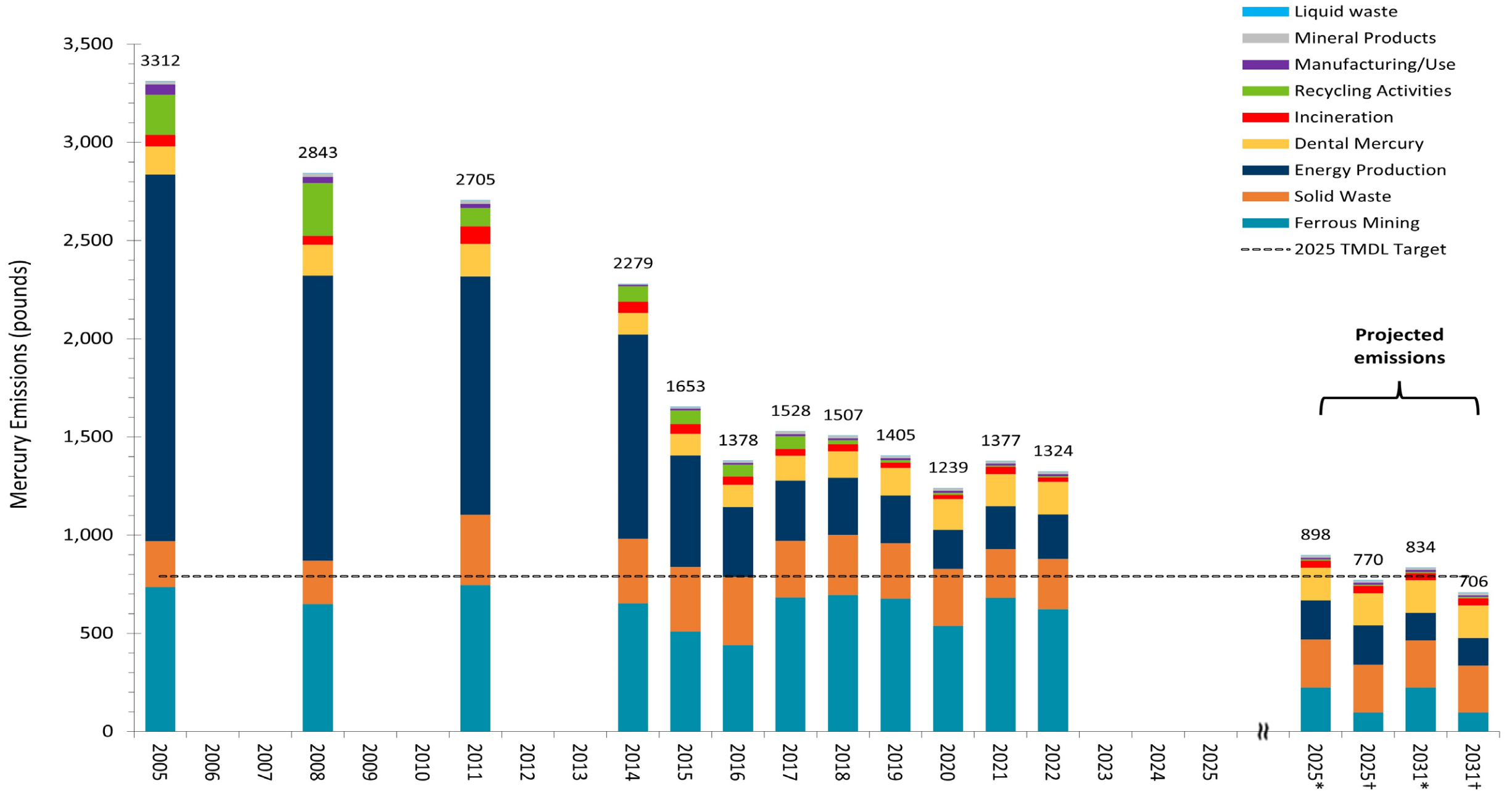
Minnesota's annual mercury emissions

- Mercury emission inventory updates
 - 2021 and 2022 point source emissions
 - New data available from EPA's 2020 National Emissions Inventory
 - New off-year Minnesota estimates for nonpoint mercury from solid waste
- Notable takeaways
 - Emissions from energy production and mining increase from pandemic low
 - Emissions from mercury in products continues to decrease



* This projection is based on the ferrous mining/processing industry in northern MN meeting the required 72% reduction specified in Minn. R. 7007.0502.

** This projection is based on the ferrous mining/processing industry's proposed reductions in each mercury reduction plan applied to the baseline emissions as calculated by MPCA.



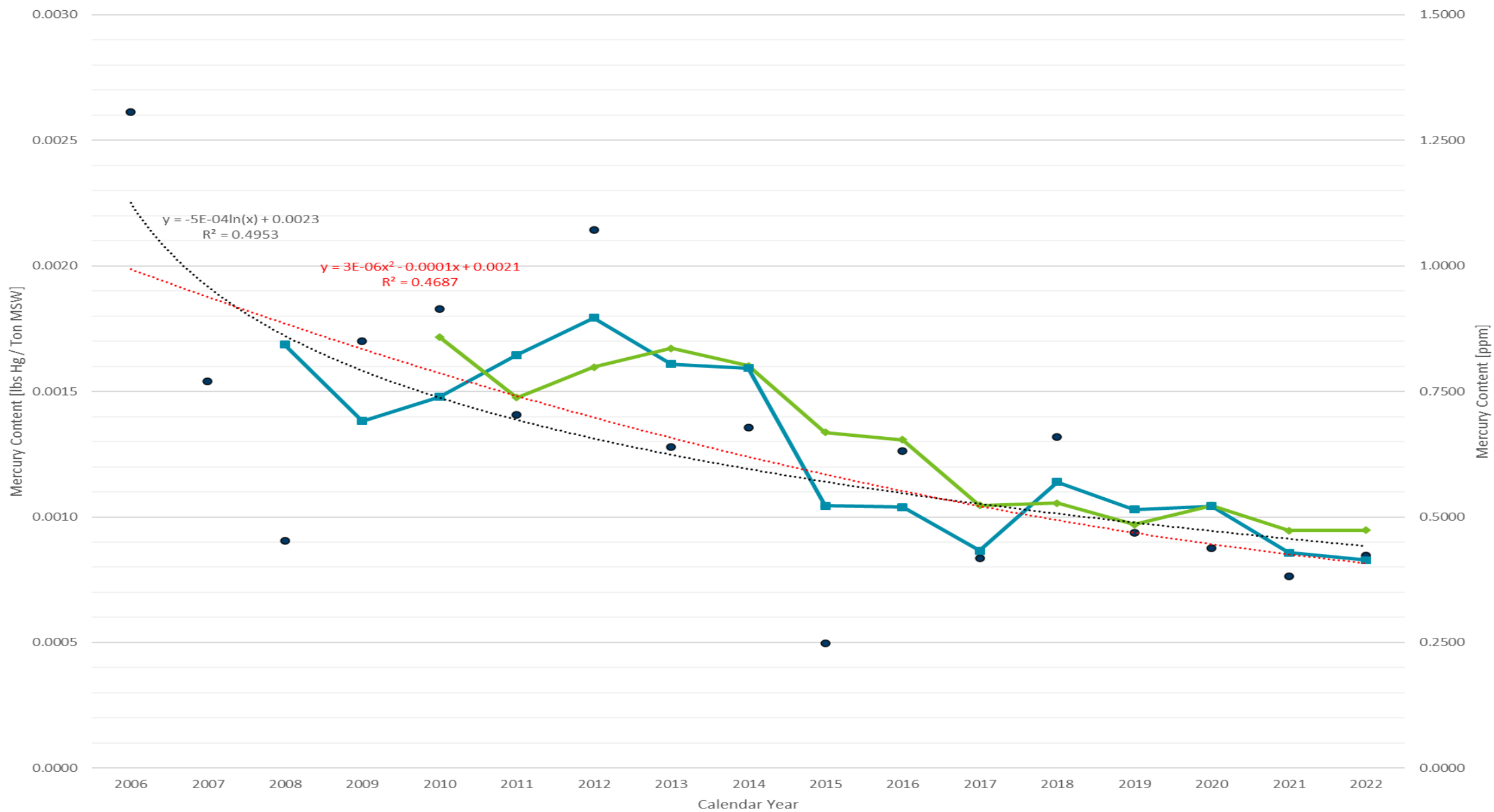
* This projection is based on the ferrous mining/processing industry in northern MN meeting the required 72% reduction specified in Minn. R. 7007.0502.

† This projection is based on the ferrous mining/processing industry implementing ACI and setting future projected emissions from Mesabi Metallics and Mesabi Nugget to zero.

Minnesota's mercury emissions inventory

- Detailed review of the updated 2020-2022 emissions inventory
- Statewide Mercury TMDL Emissions Inventory Spreadsheet

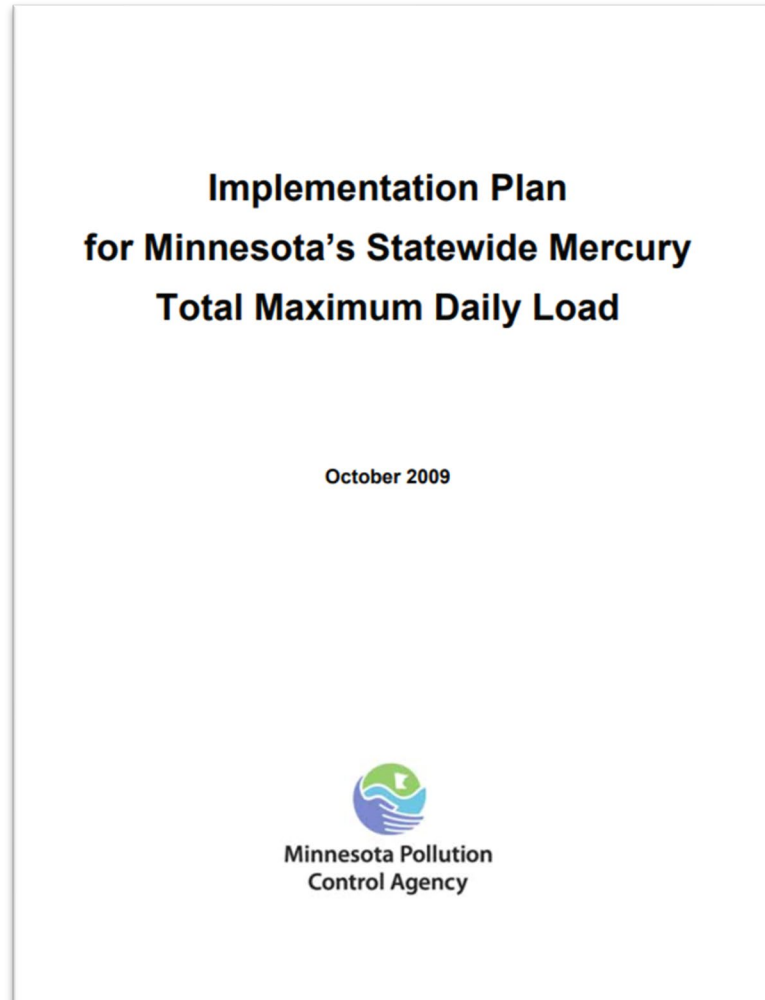




● Hg Content
 ■ Hg Content [3-year rolling average]
 ◆ Hg Content [5-year rolling average]
 Log. (Hg Content)
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Regional & national mercury emissions

Mercury reduction goals & updates



- Statewide Mercury TMDL Implementation Plan
 - Recognized that mercury emission reductions are needed from out-of-state sources as well
 - National emissions data from EPA
- EPA's National Emissions Inventory (NEI)
 - Triennial inventory of air emissions
 - Regional & national emissions comparison

Regional & national mercury emissions

Mercury reduction goals

	Mercury Emissions (pounds)						Goals	
	2005	2008	2011	2014	2017	2020	2018	2025
Minnesota	3,312	2,843	2,705	2,279	1,528	1,239	1,464	789
<i>(% reduction vs. 2005)</i>	0%	14%	18%	31%	54%	63%	56%	76%
Regional	22,170	16,970	14,328	12,389	5,715	5,609	9,755	5,232
<i>(% reduction vs. 2005)</i>	0%	23%	35%	44%	74%	75%	56%	76%
<i>Minnesota</i>	3,312	2,843	2,705	2,279	1,528	1,239		
<i>Michigan</i>		4,545	3,915	3,864	1,316	1,280		
<i>Wisconsin</i>		3,315	1,631	1,405	848	1,040		
<i>North Dakota</i>		3,105	2,973	2,320	987	1,084		
<i>South Dakota</i>		269	269	226	116	107		
<i>Iowa</i>		2,893	2,835	2,295	921	859		
National	225,491	122,278	112,873	103,626	65,668	64,451	99,216	53,216
<i>(% reduction vs. 2005)</i>	0%	46%	50%	54%	71%	71%	56%	76%
Global			4,321,055	4,850,170				

Regional & national mercury emissions

Mercury reduction goals

	Energy Production				
	Mercury Emissions (pounds)				
	2008	2011	2014	2017	2020
Minnesota	1,451	1,214	1,039	308	198
Regional	14,020	11,013	9,456	2,959	3,015
National	91,173	81,625	73,979	36,168	38,772

	Mercury in Products				
	Mercury Emissions (pounds)				
	2008	2011	2014	2017	2020
Minnesota	726	730	586	525	489
Regional	950	1,372	1,129	1,373	1,395
National	10,544	12,009	9,456	13,113	11,898

	Material Processing				
	Mercury Emissions (pounds)				
	2008	2011	2014	2017	2020
Minnesota	666	762	655	696	552
Regional	2,000	1,943	1,805	1,383	1,200
National	20,536	19,185	19,898	15,798	13,578

- EPA's National Emissions Inventory (NEI)
 - Sectors (e.g., fuel combustion, industrial processes)
 - Subcategories (e.g., fuel type, industry type)
- Organized by Minnesota's mercury categories
- Largest contributors
 - Energy production (electricity generation)
 - Mercury in products (waste disposal)
 - Material processing (ferrous metals & cement manufacturing)

Moving forward

- Greater emissions reductions are needed to meet the goal of the statewide mercury TMDL.
 - Minnesota met our 2018 reduction goals, but more work is needed to meet the 2025 goal
 - Statewide mercury emissions temporarily declined largely due to Covid-related production decreases
 - Further reductions are needed from mining-related mercury and mercury in products category
- Continue to promote mercury emission reductions within the state as well as regionally, nationally and globally