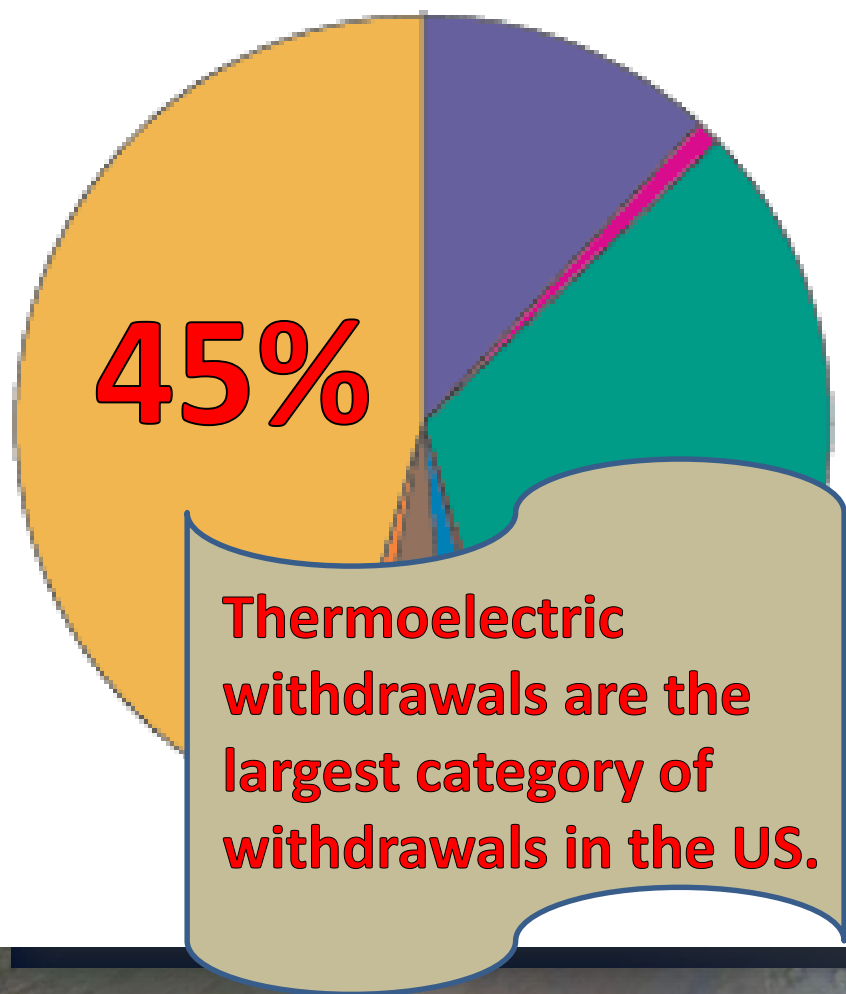


# A Comparison of Three Federal Datasets for Thermoelectric Water Withdrawals in the U.S. for 2010

2018 EIA Energy Conference  
June 5, 2018

Melissa A Harris & Timothy H Diehl,  
U.S. Geological Survey,  
Lower Mississippi-Gulf Water Science Center

# Thermoelectric Withdrawals

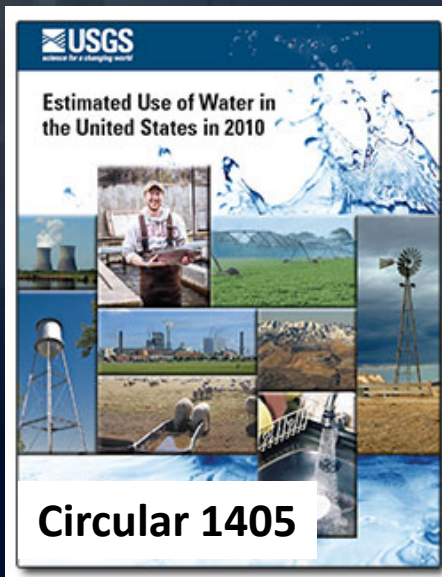


2010 withdrawals by category, in million gallons per day

	Public supply	42,000
	Self-supplied domestic	3,600
	Irrigation	115,000
	Livestock	2,000
	Aquaculture	9,420
	Self-supplied industrial	15,900
	Mining	5,320
	Thermoelectric power	161,000

Values do not sum to 355,000 Mgal/d because of independent rounding

# 2010 Thermoelectric Withdrawal Data Comparison



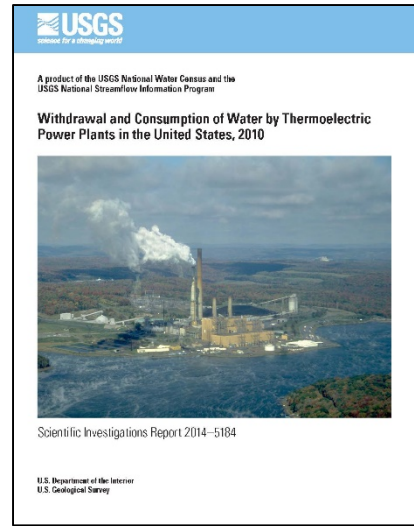
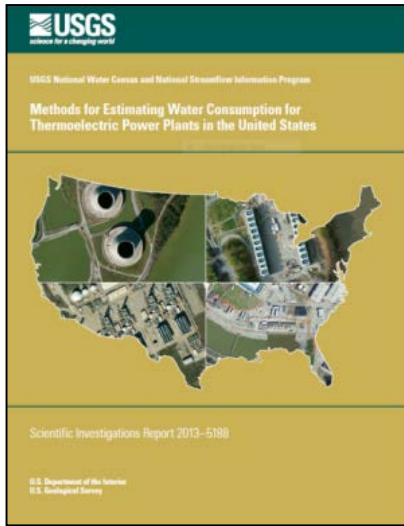
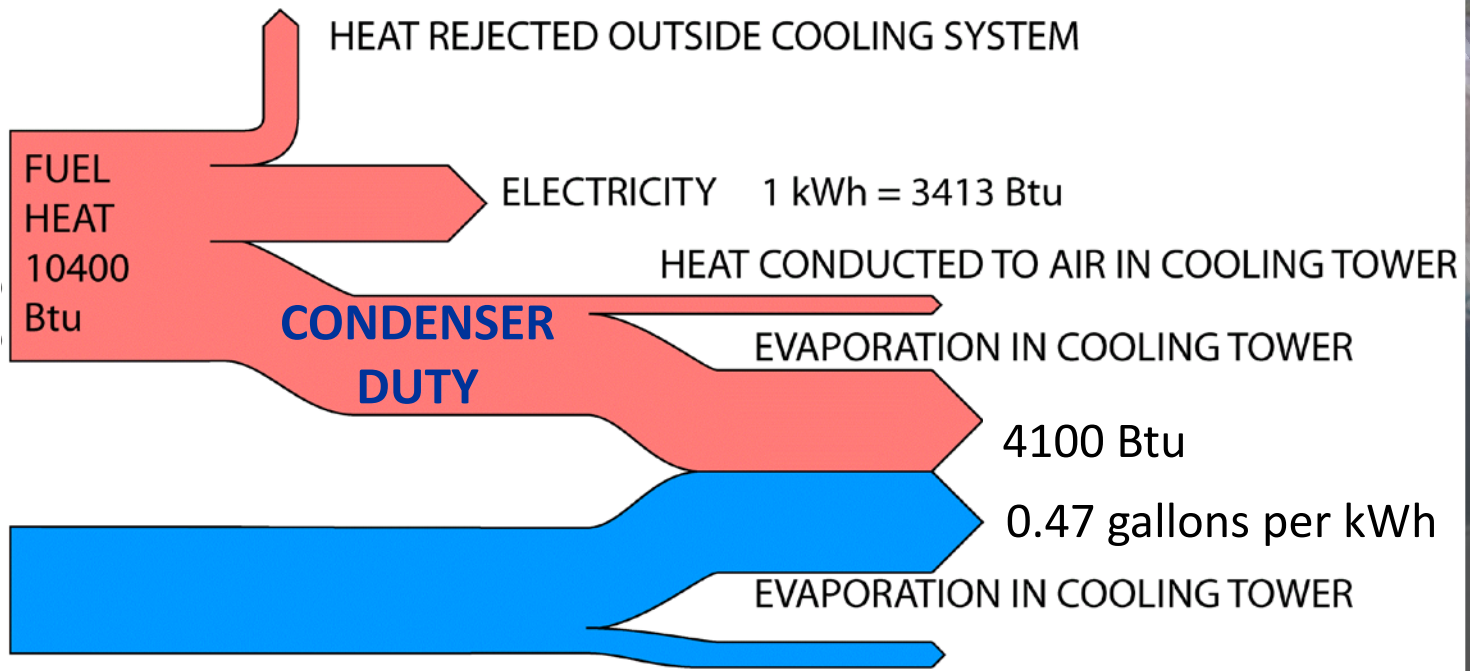
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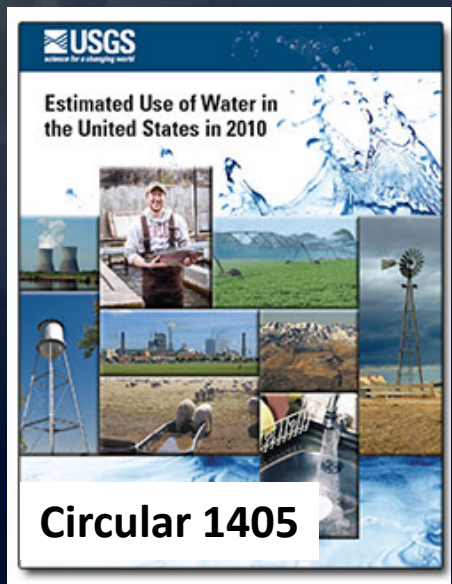
USGS  
COMPILATION

ENERGY INFORMATION  
ADMINISTRATION

# USGS Water-Use Models



# 2010 Thermoelectric Withdrawal Data Comparison



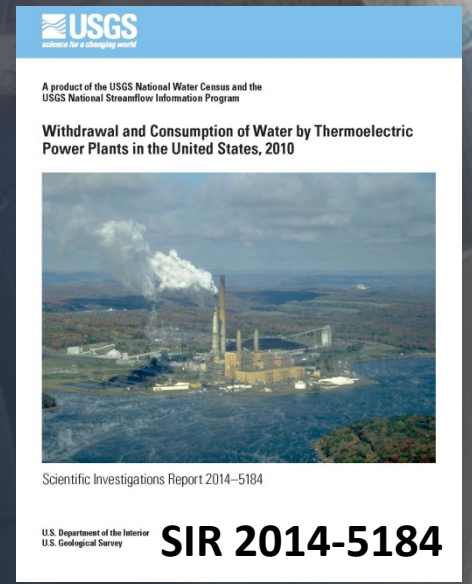
**USGS  
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**USGS MODEL**

# Purpose

- Better understand the uncertainties in thermoelectric withdrawal data

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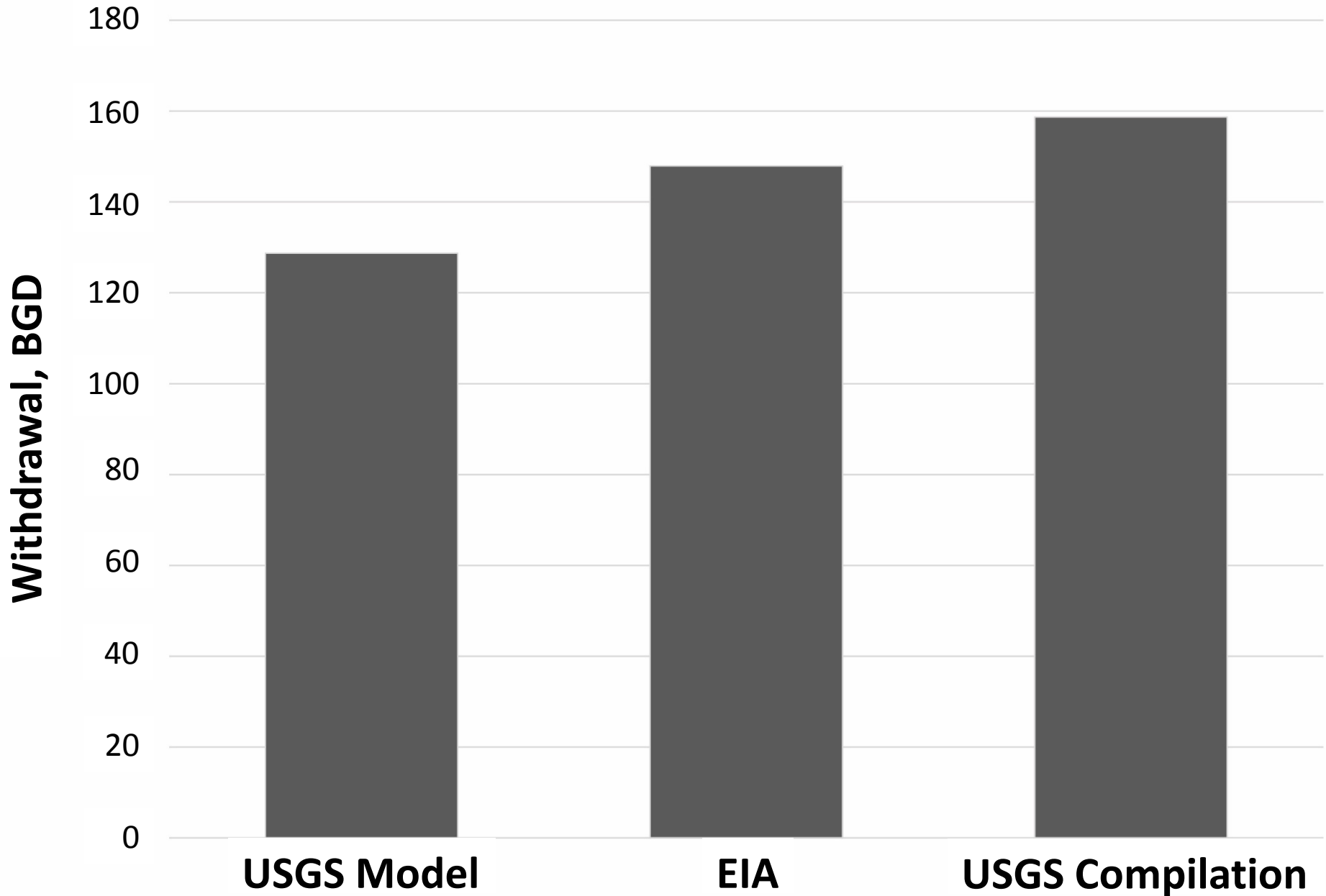
- Better understand the uncertainties in thermoelectric withdrawal data
- Improve the usefulness of thermoelectric water-use information



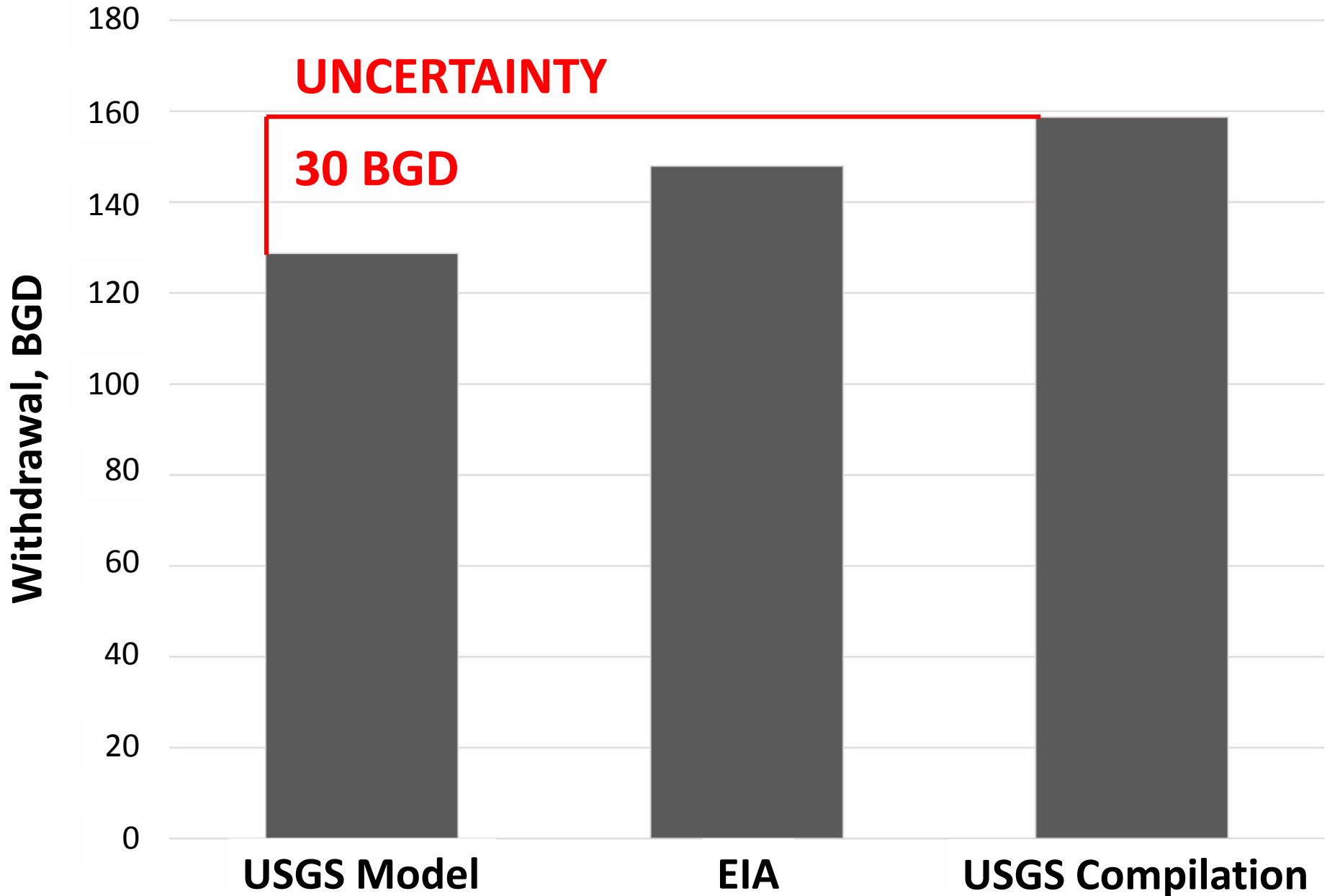
**NATIONAL TOTALS**



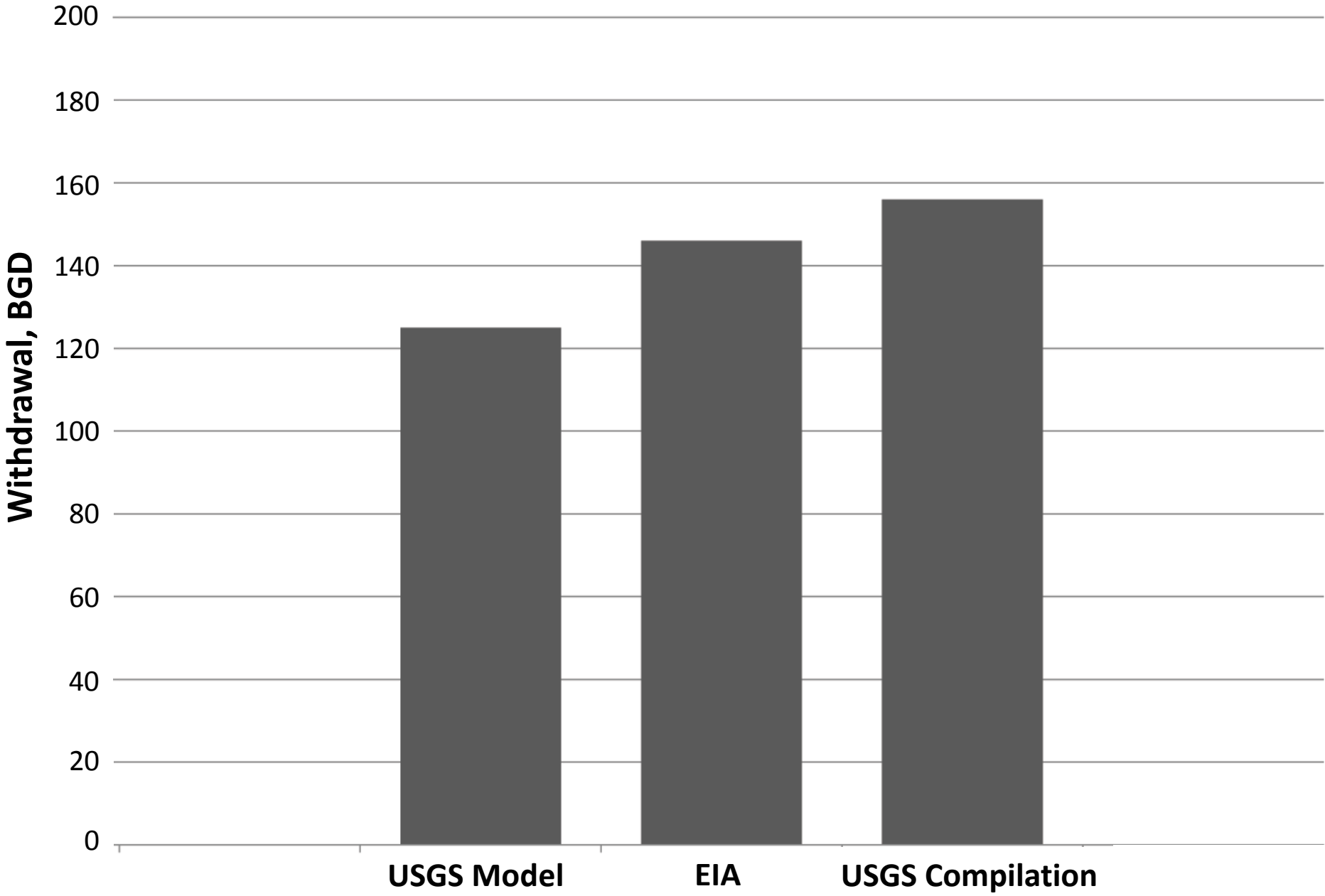
# 2010 National Total Thermoelectric Withdrawals



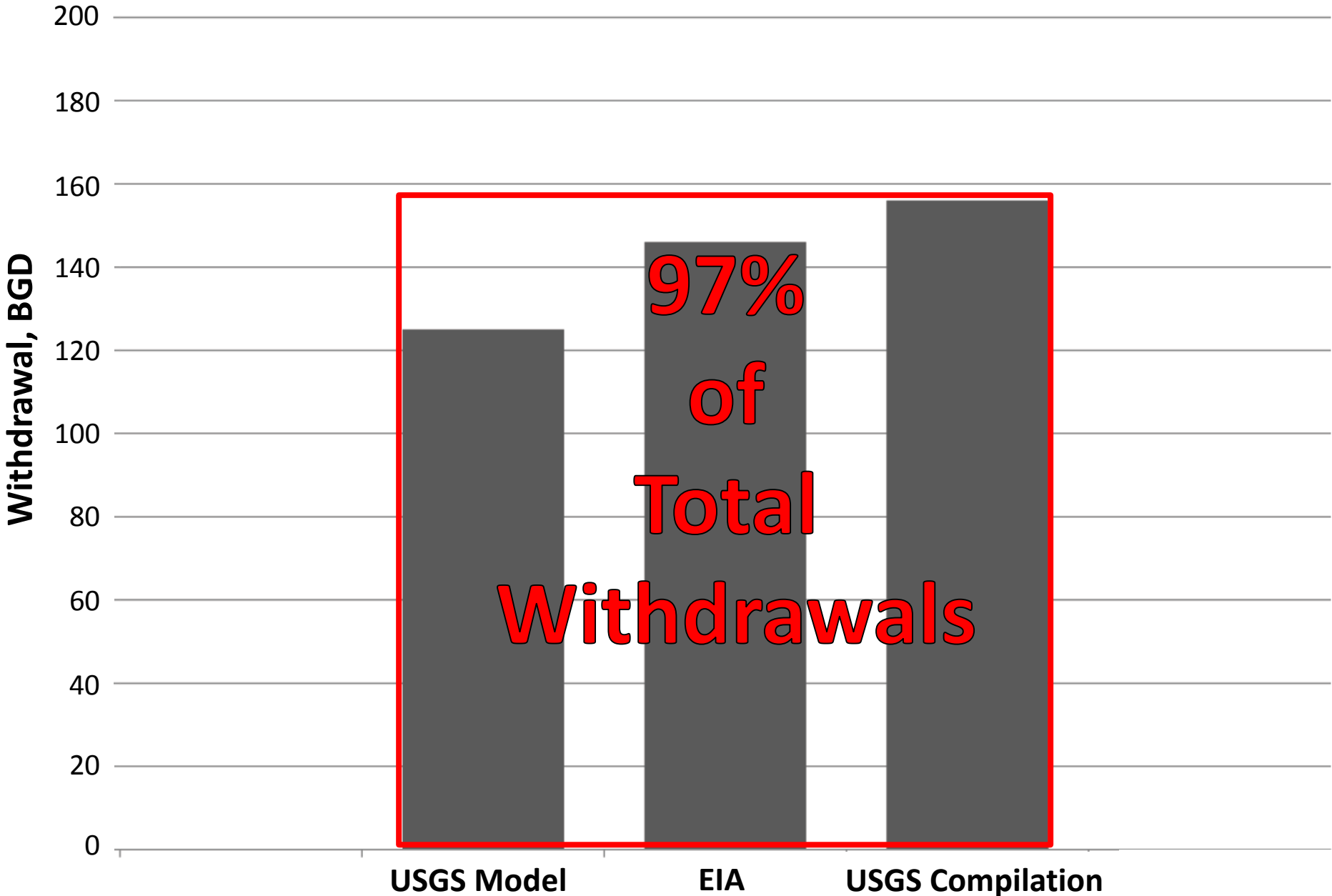
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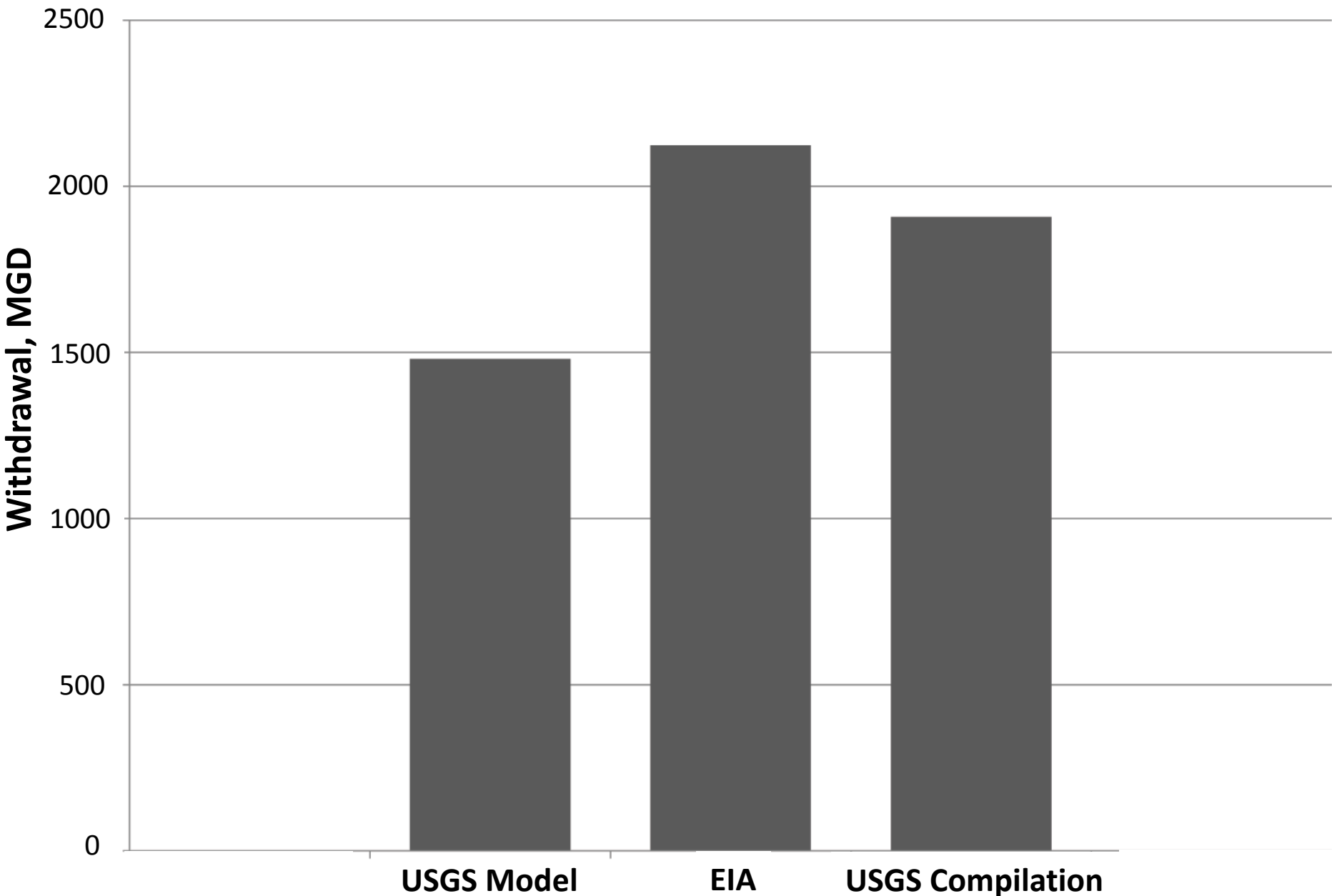
# Subset of 754 Plants in All Three Federal Datasets



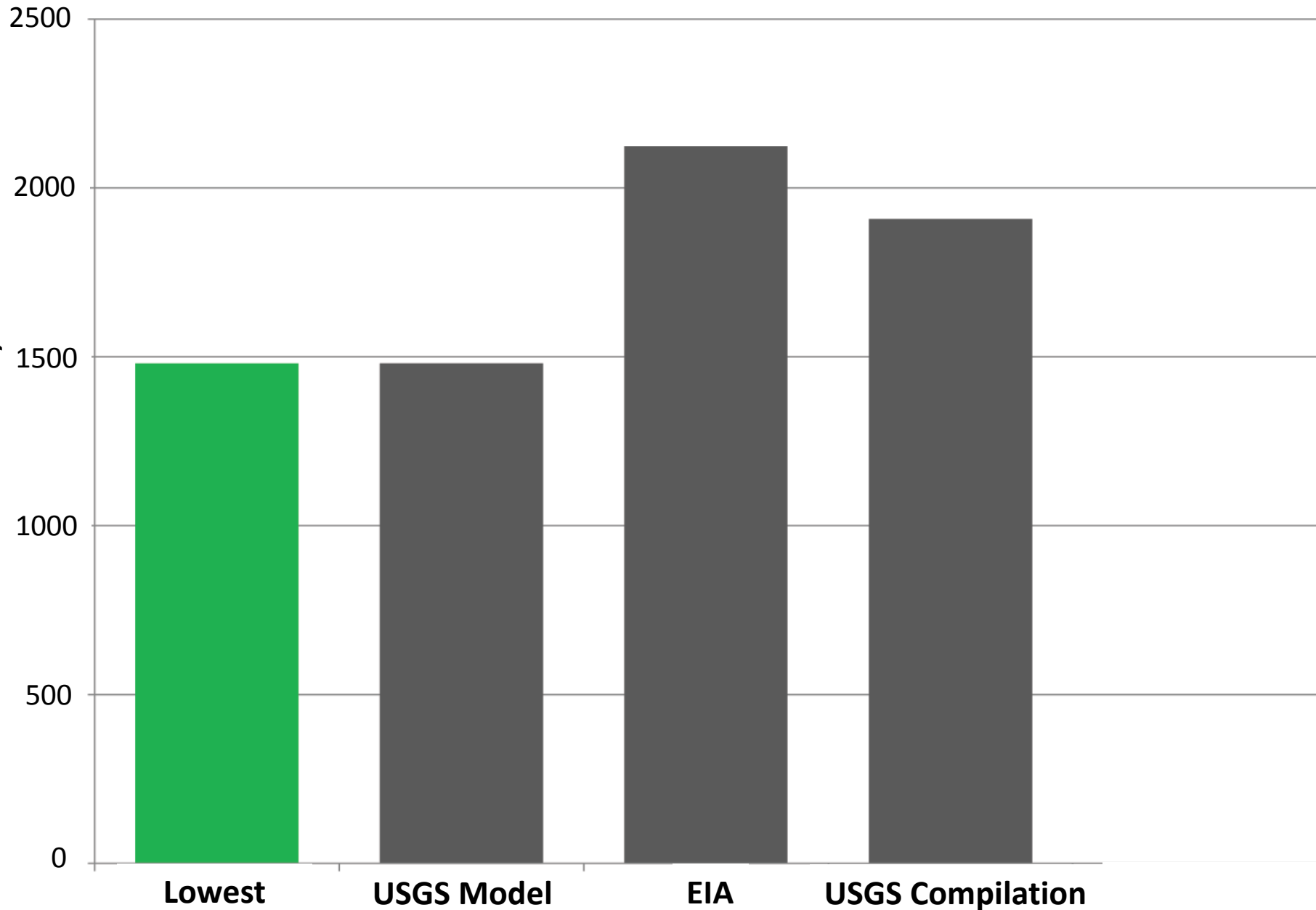
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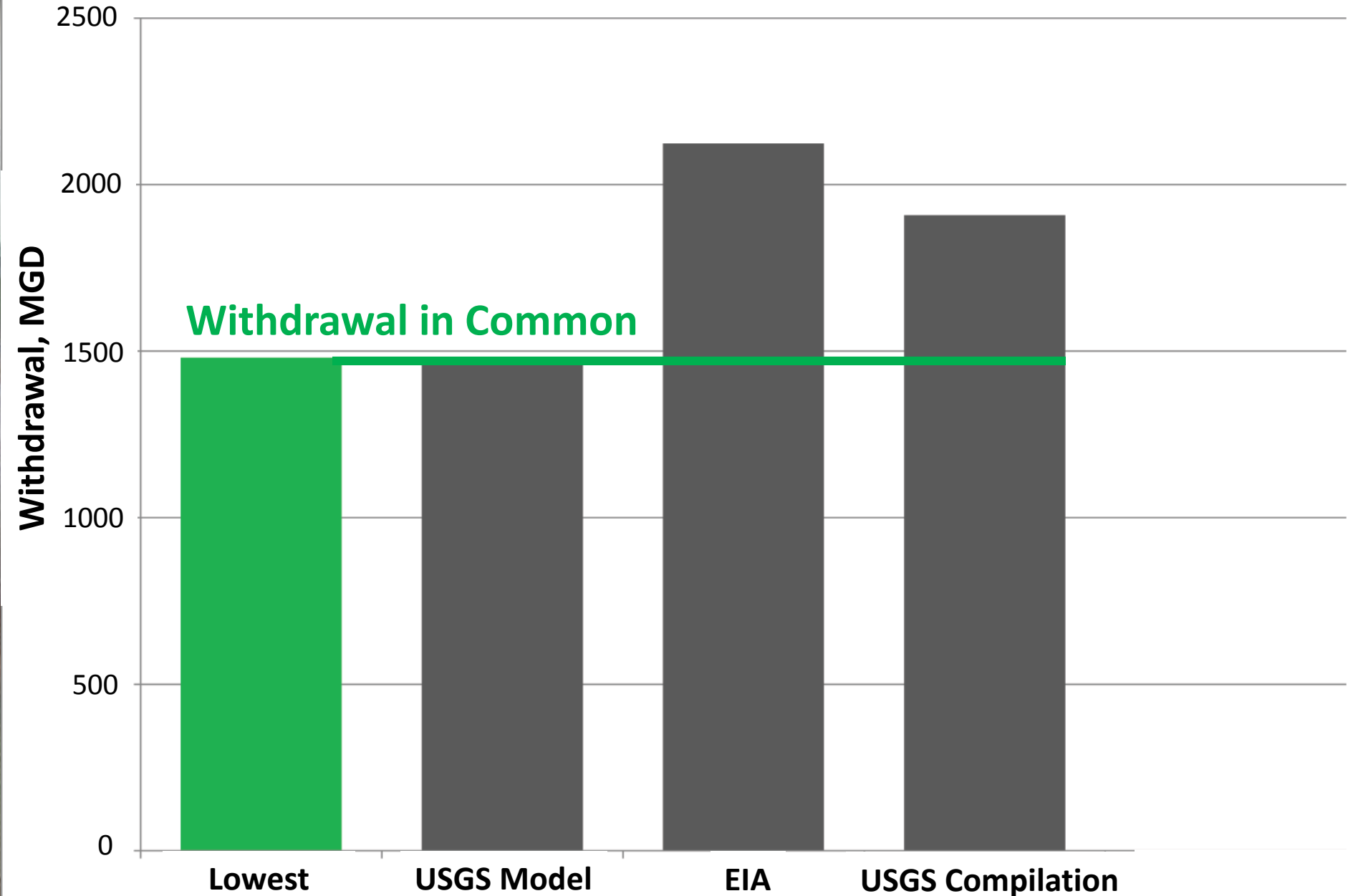
# Nuclear Power Plant, Once-through Saline Cooling



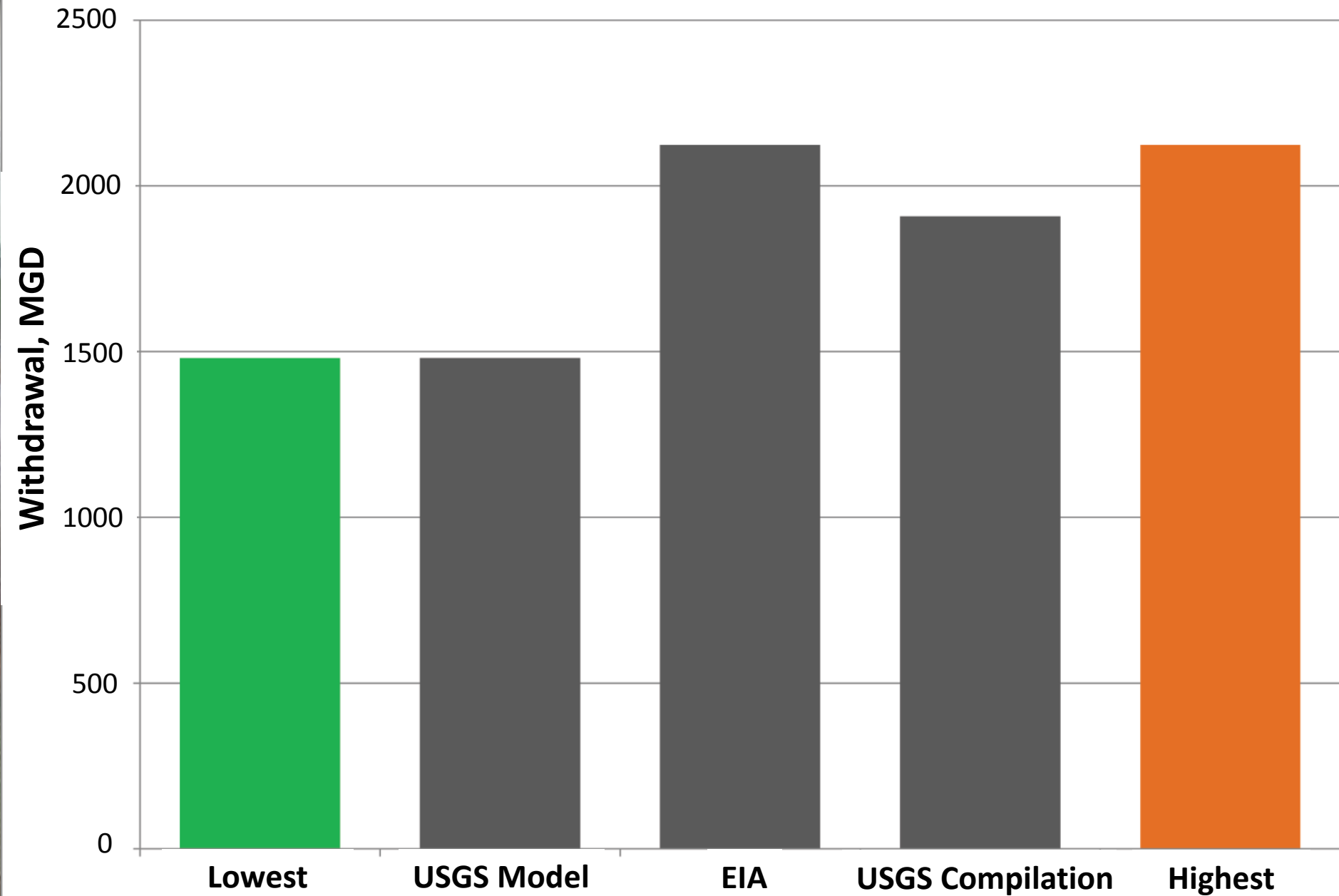
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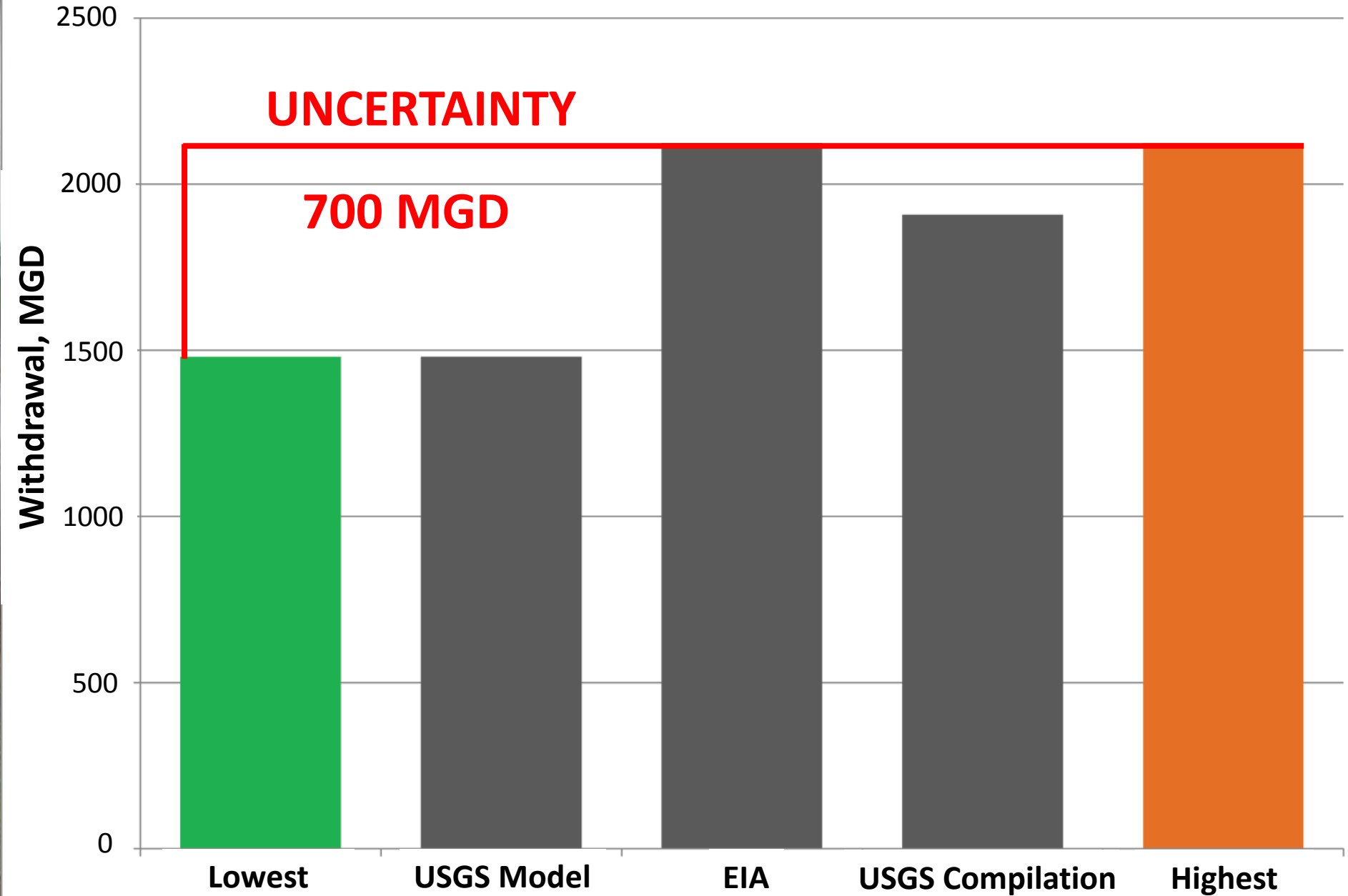


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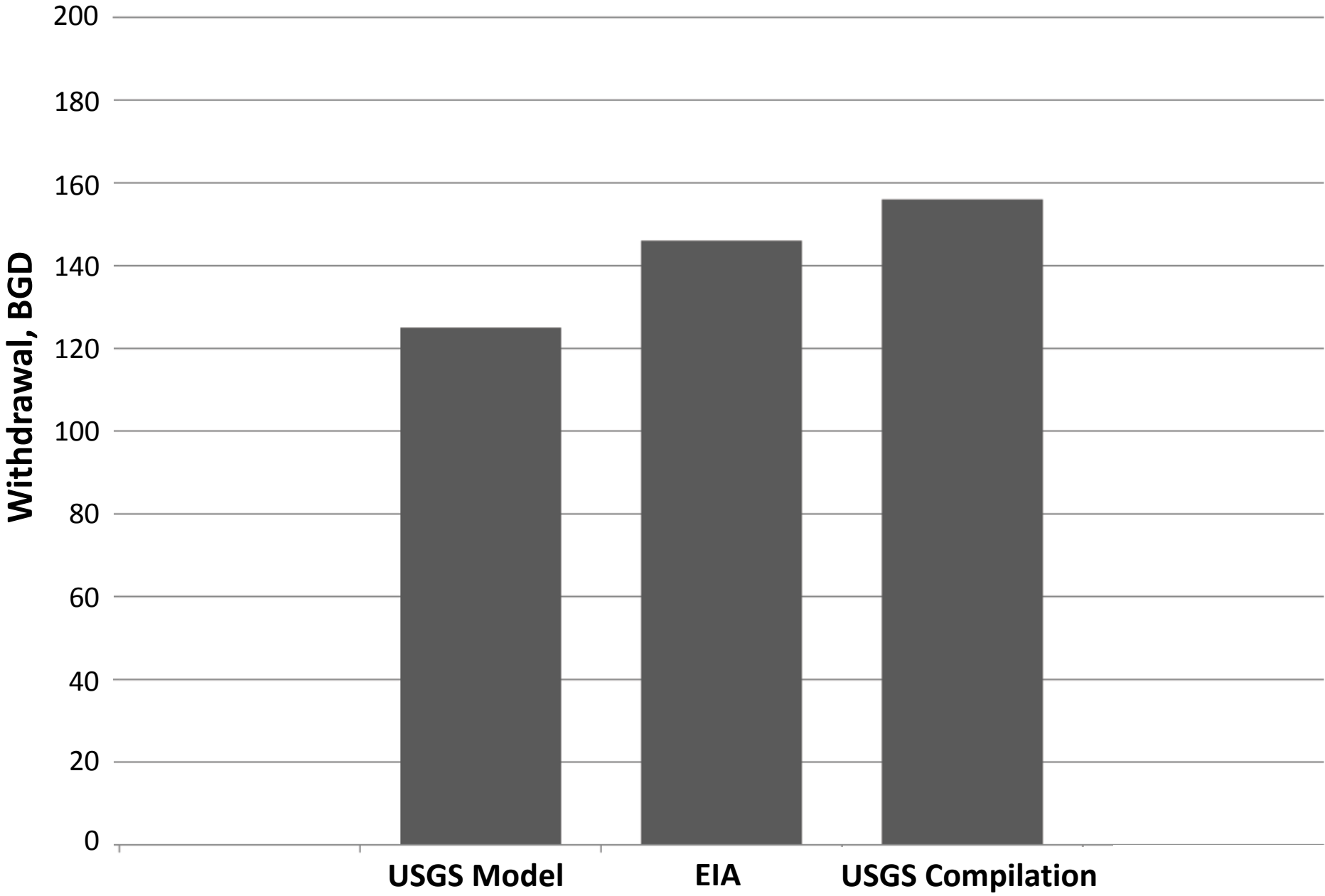




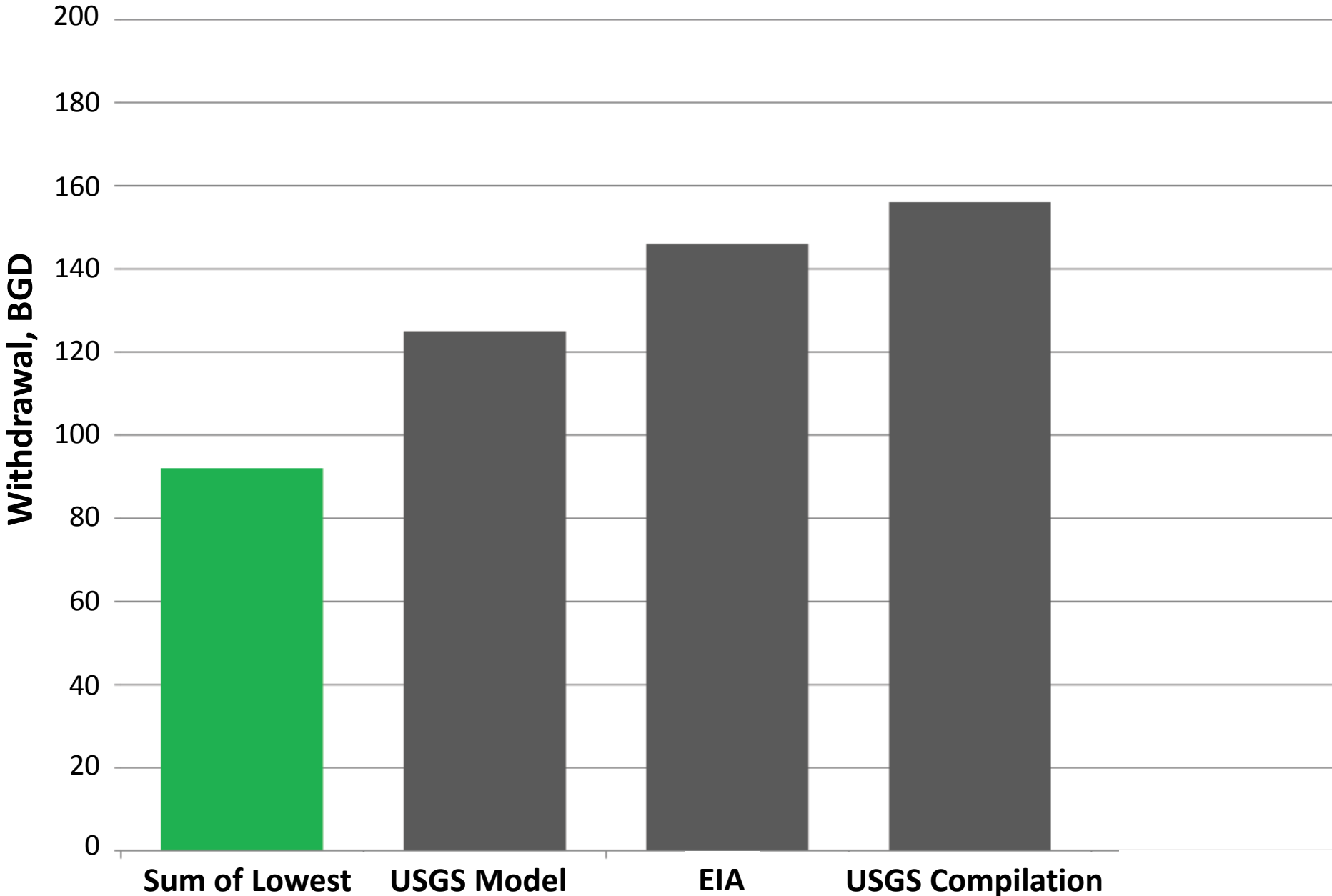
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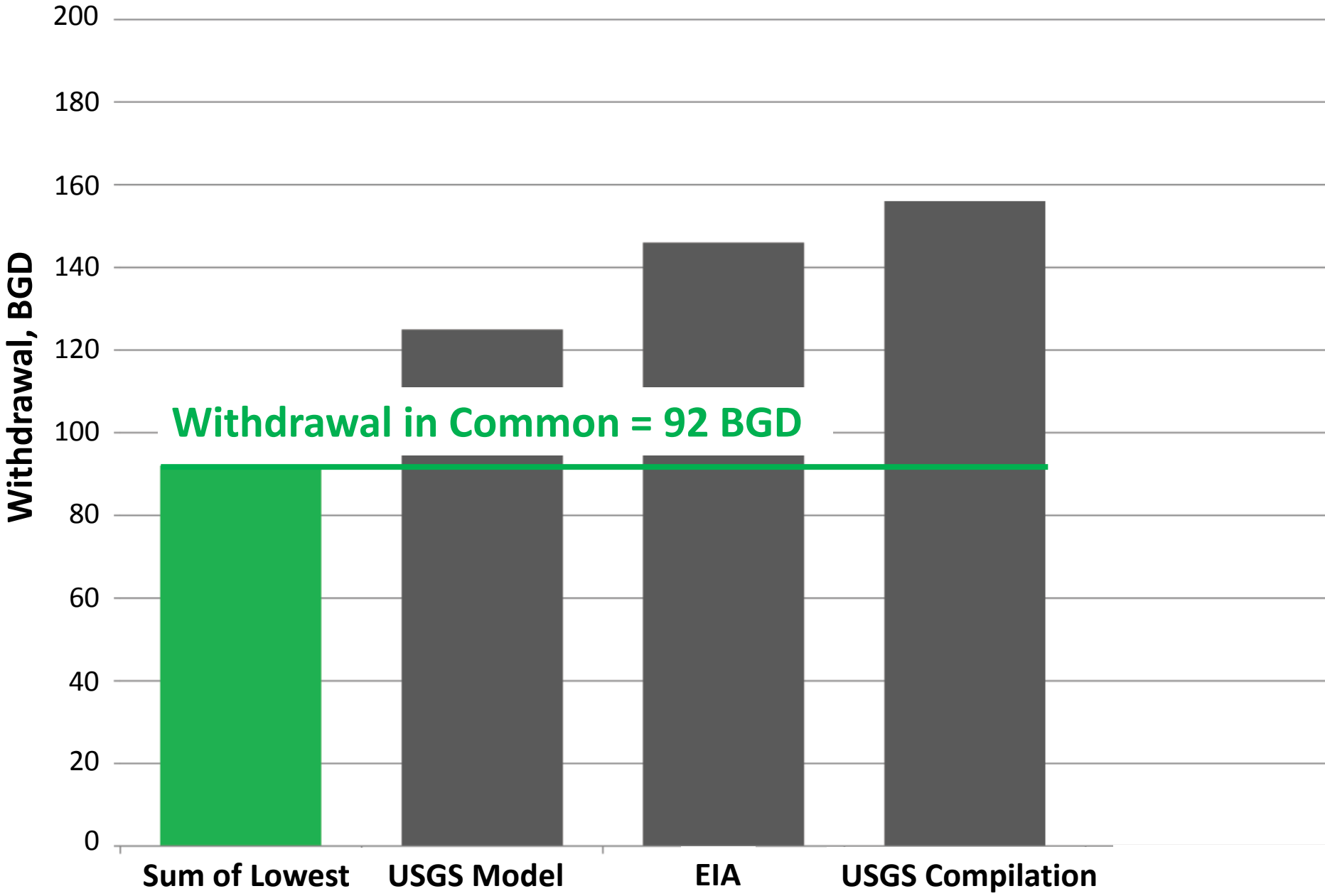
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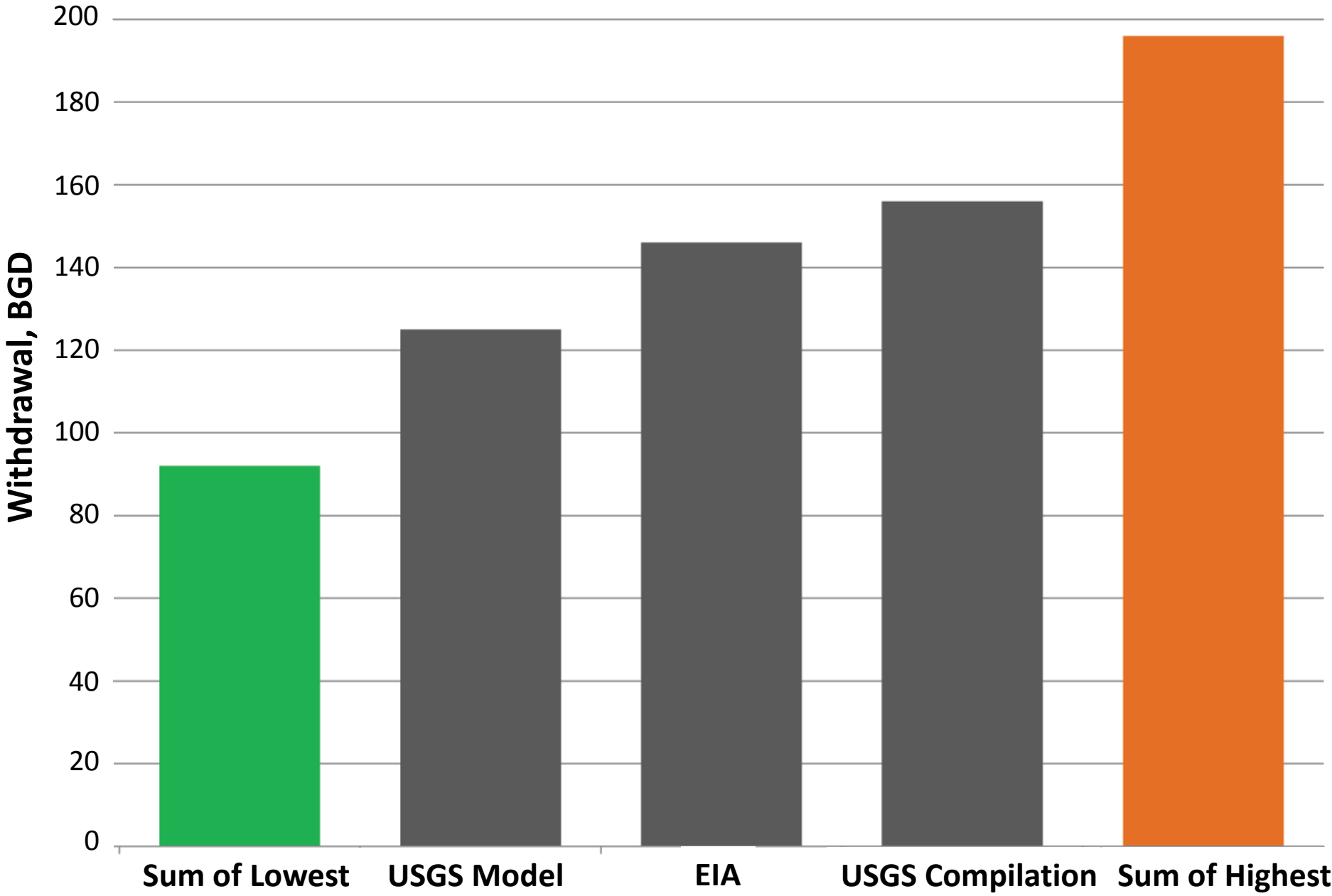


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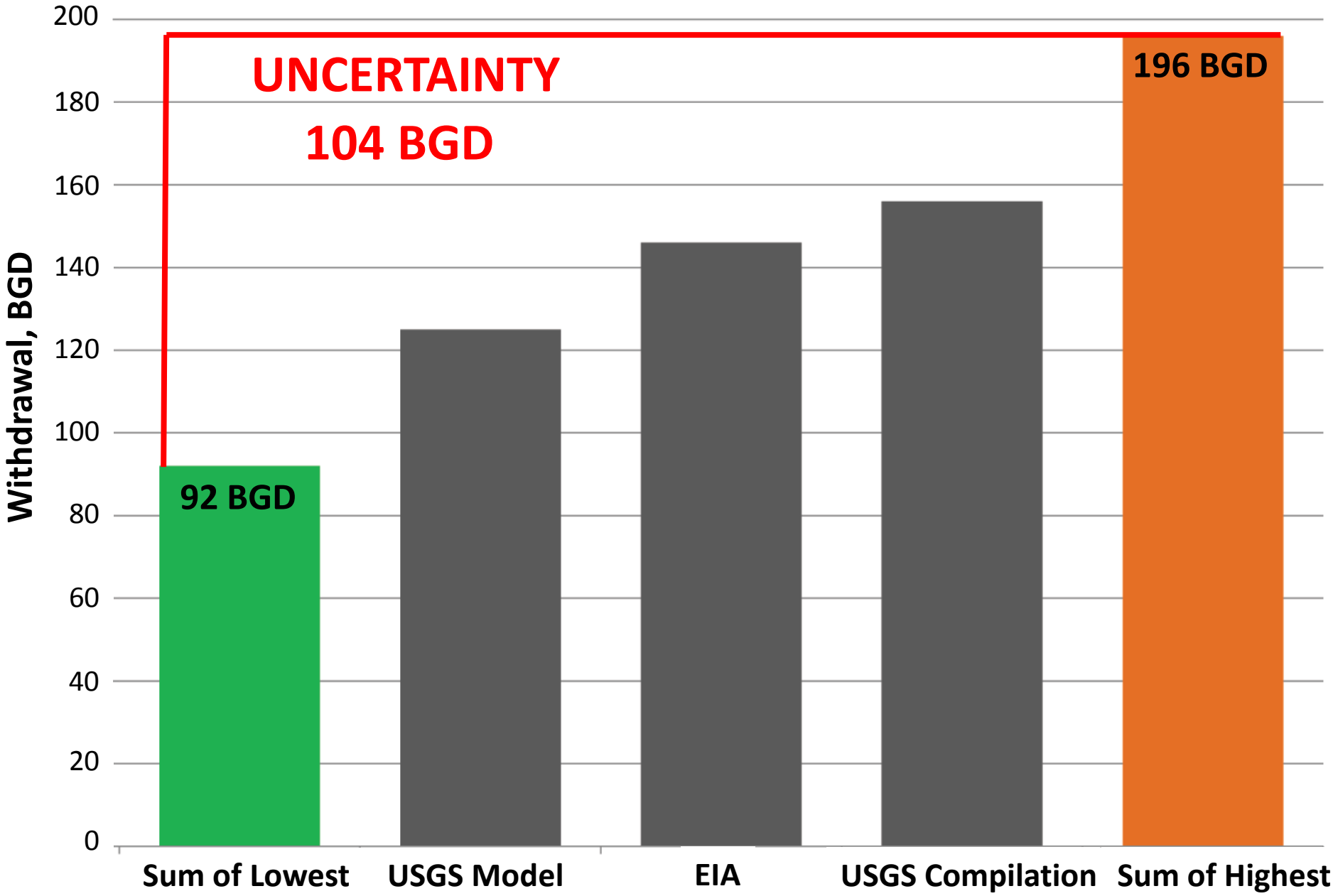


Withdrawal in Common = 92 BGD

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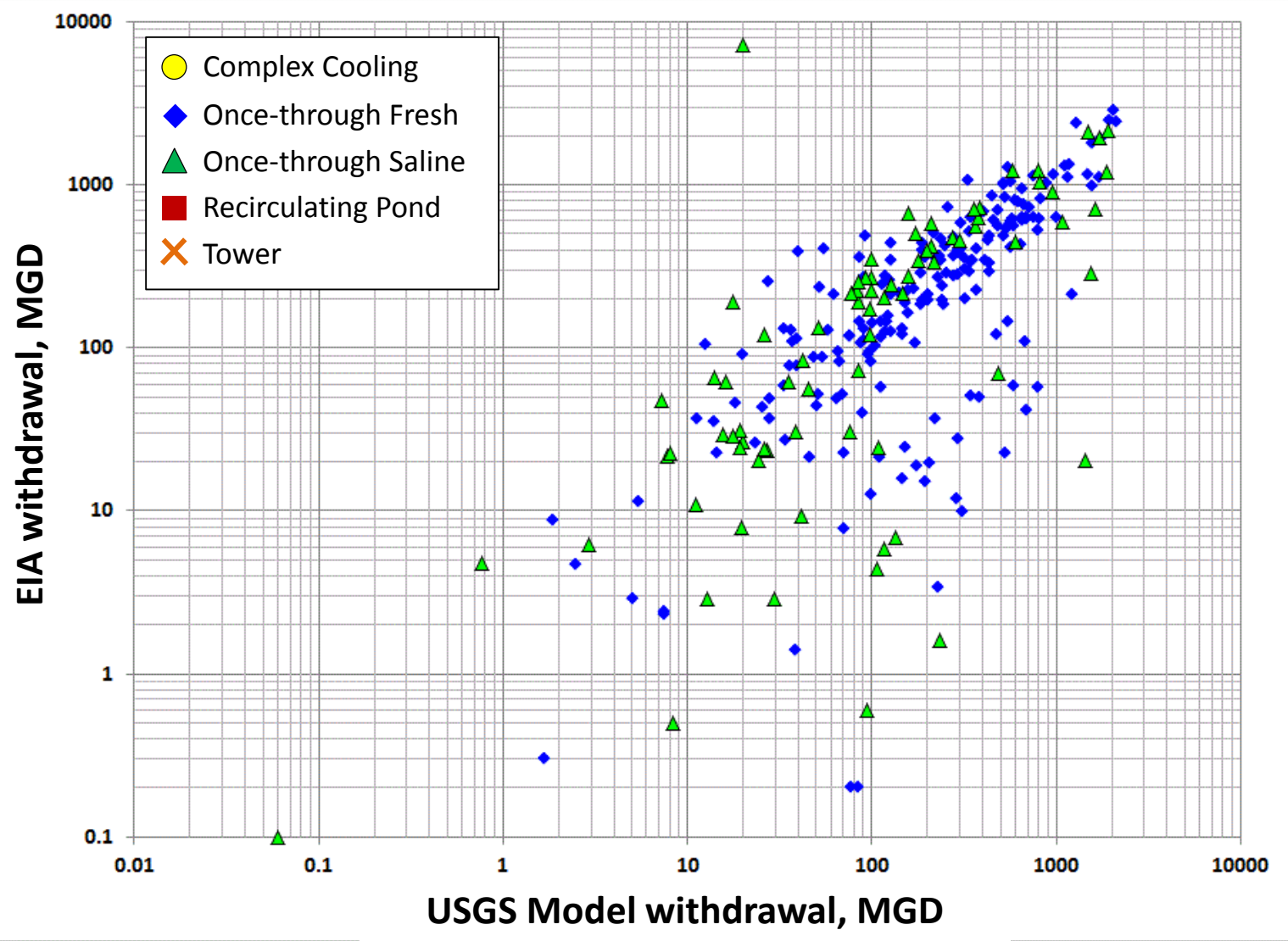
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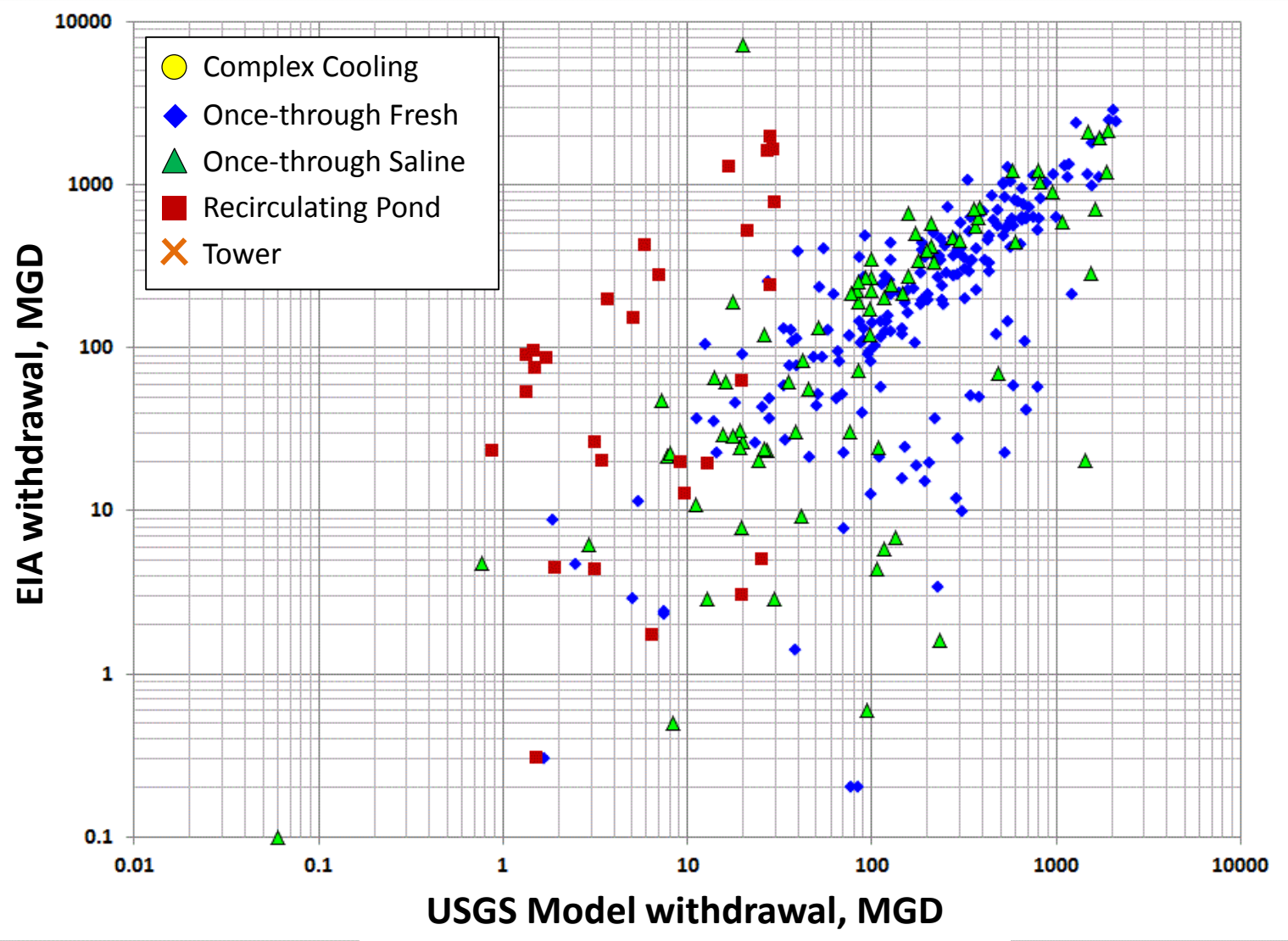
# PLANT-LEVEL COMPARISONS

# 2010 Model vs EIA withdrawal – 742 plants with same cooling-system type

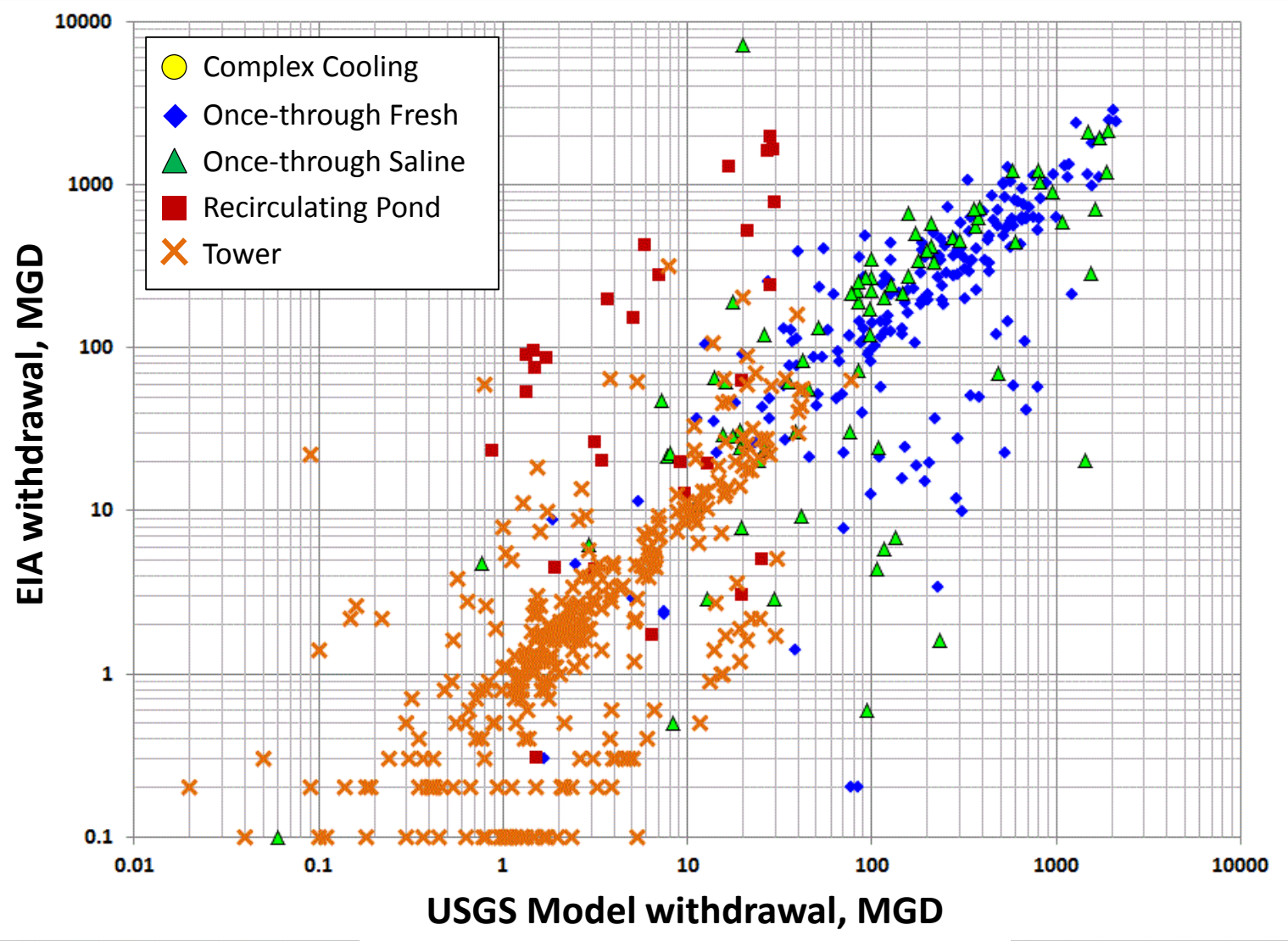




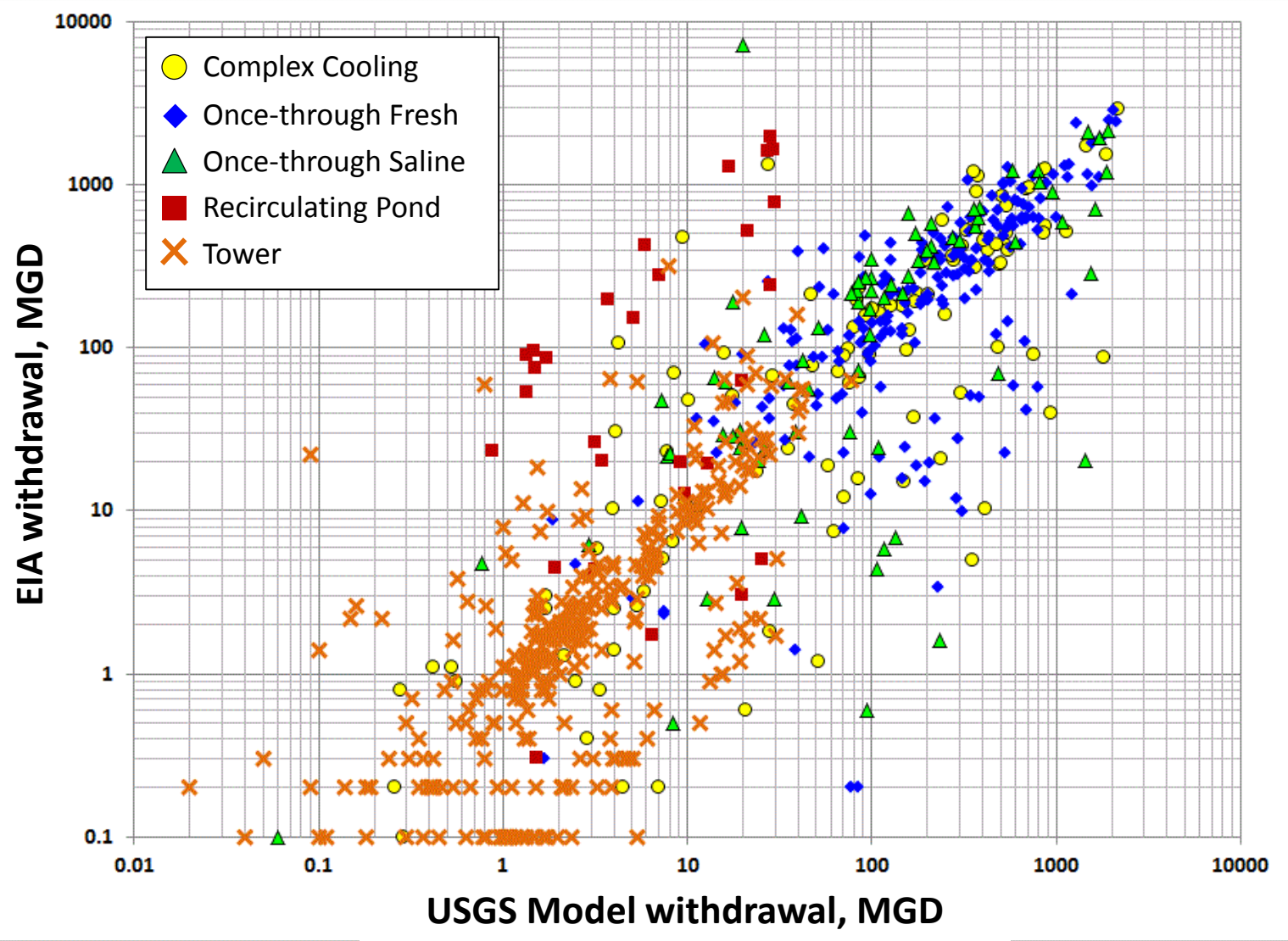
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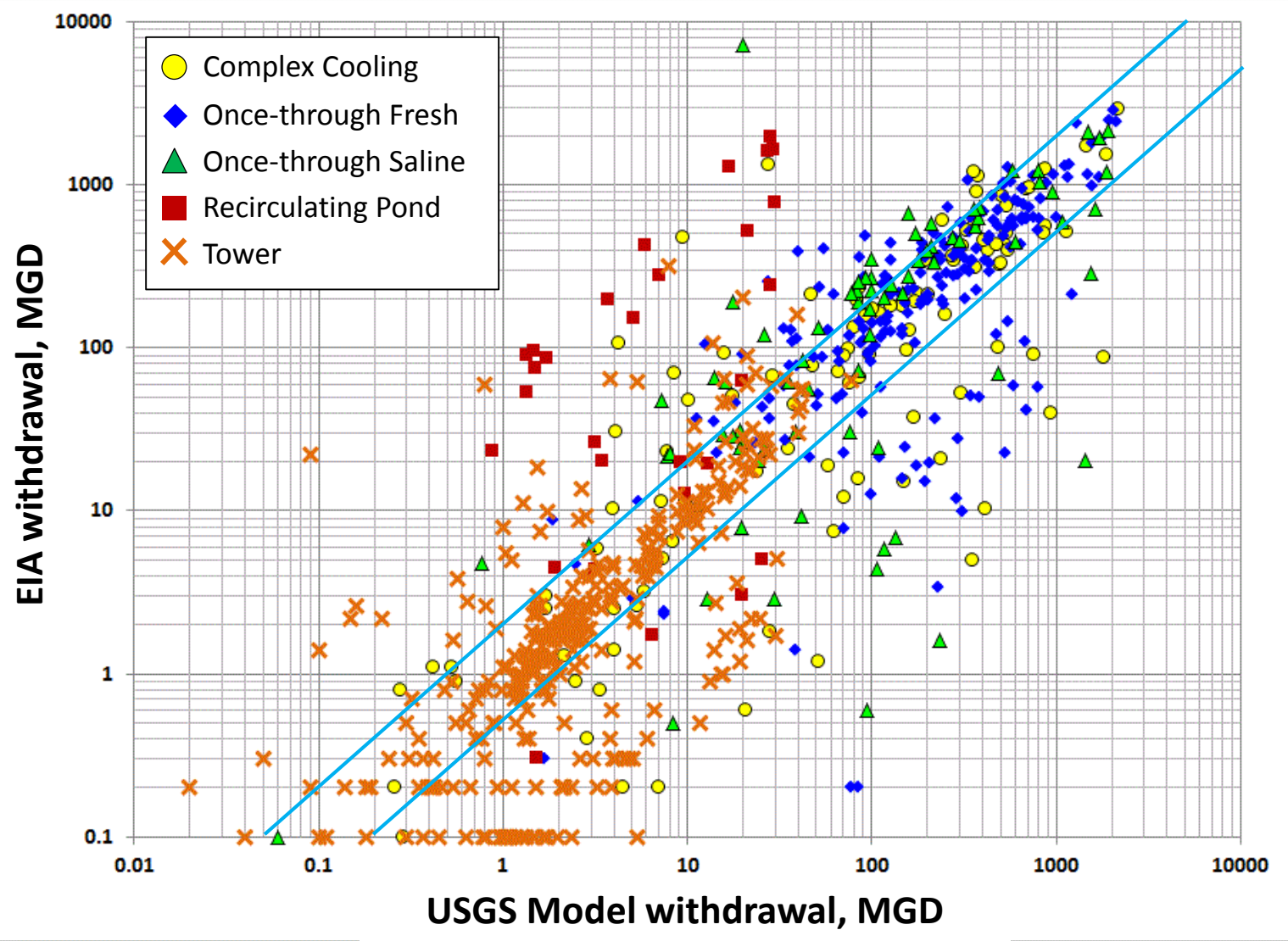
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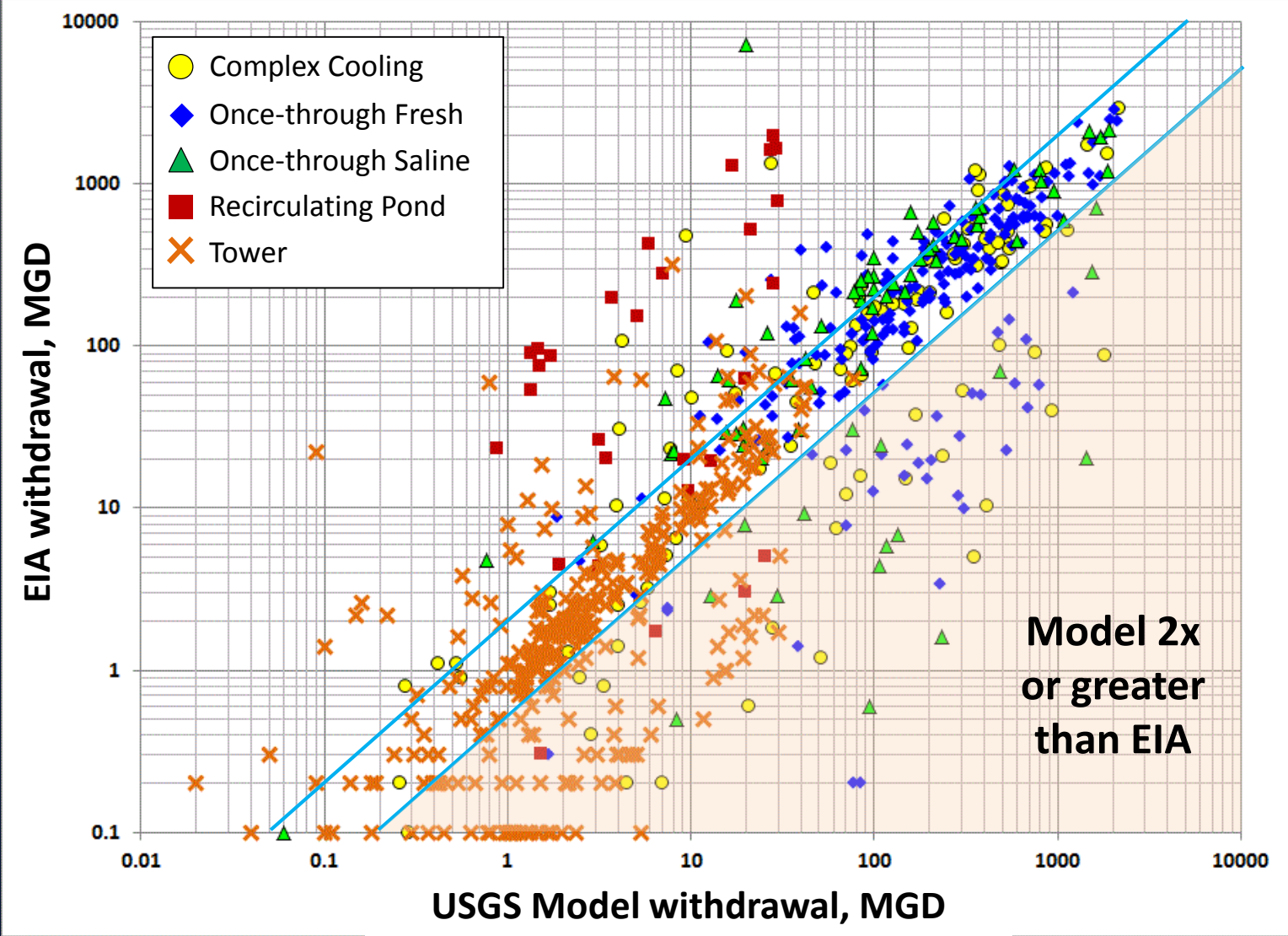
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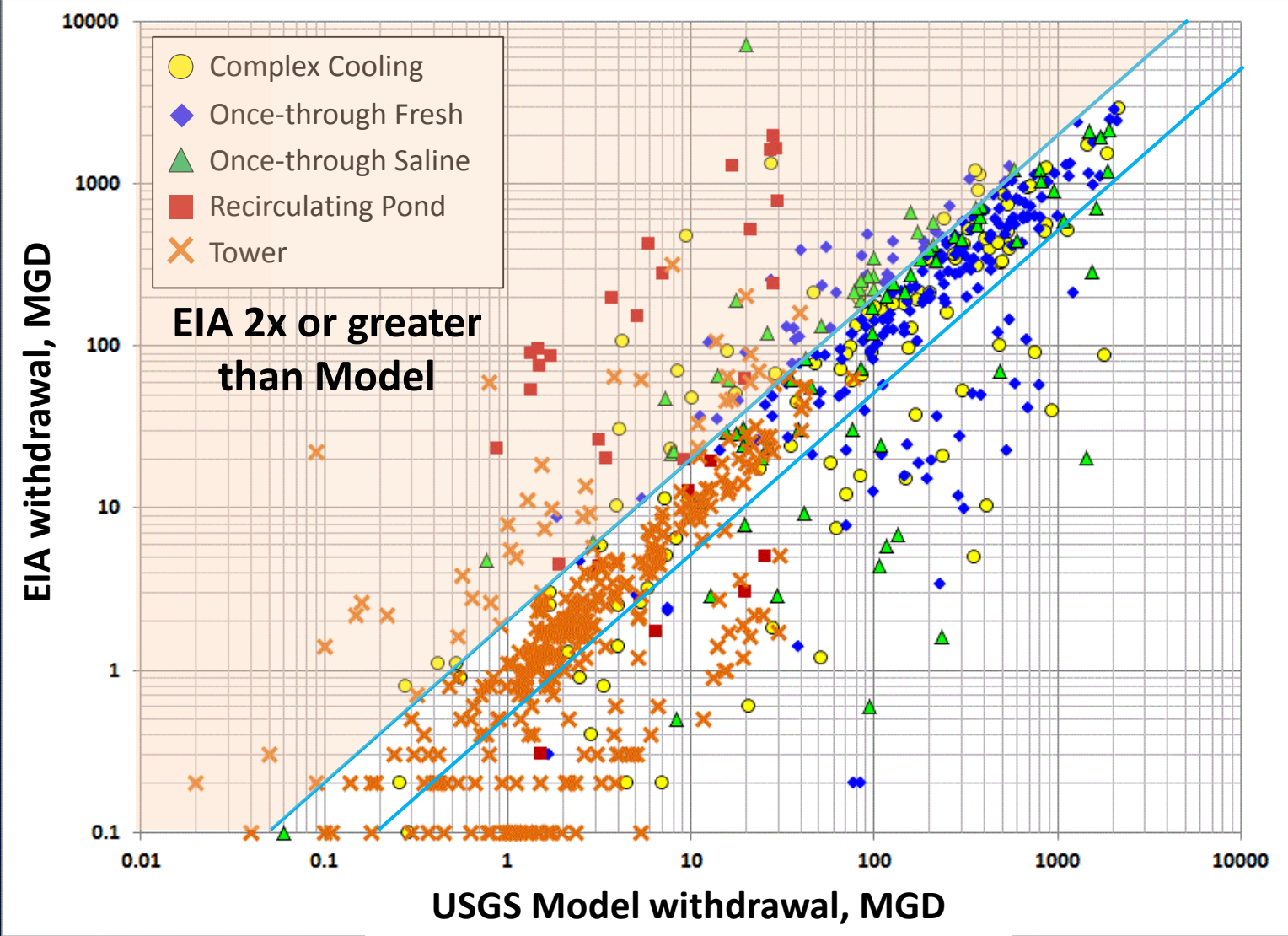
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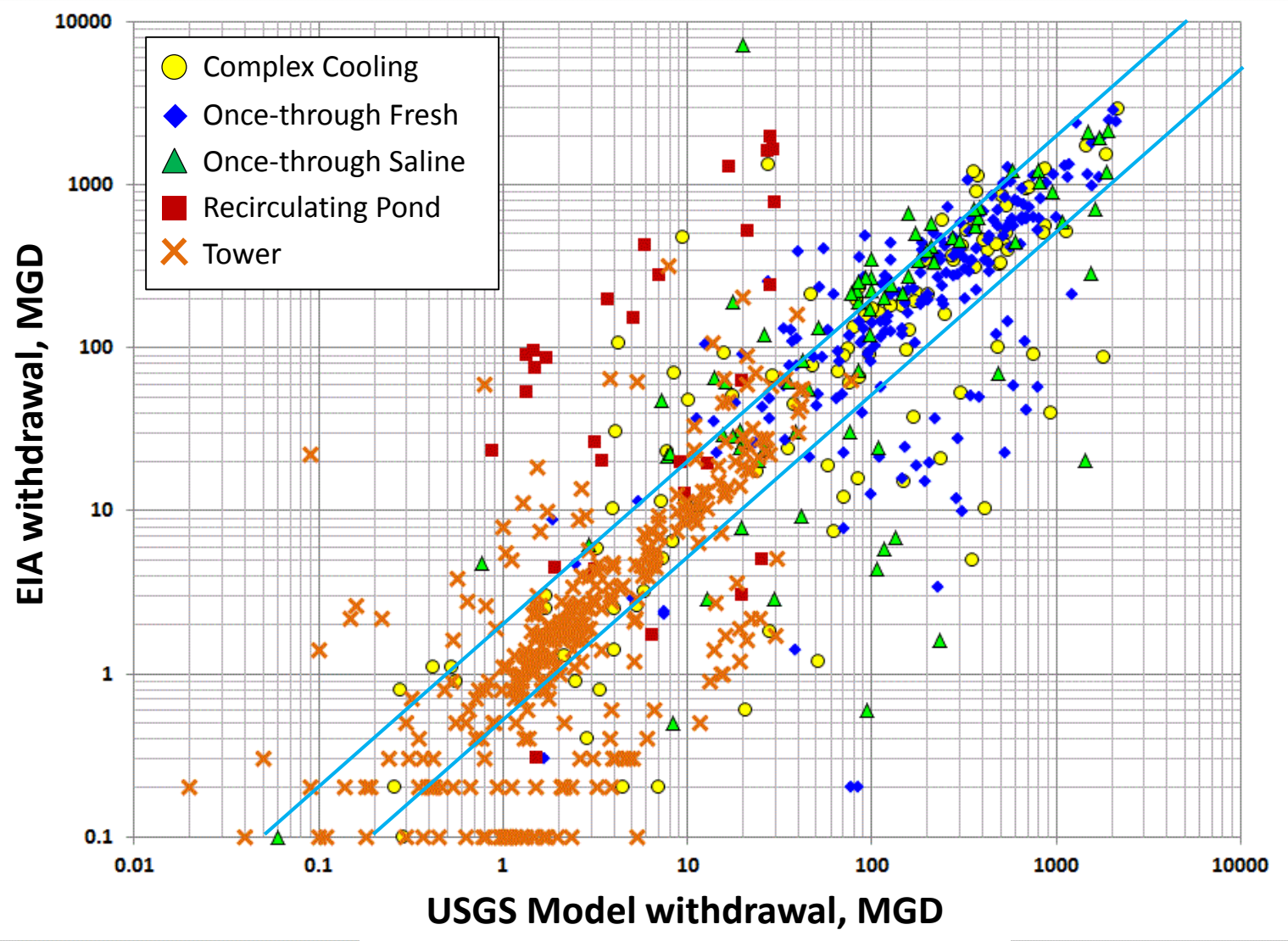
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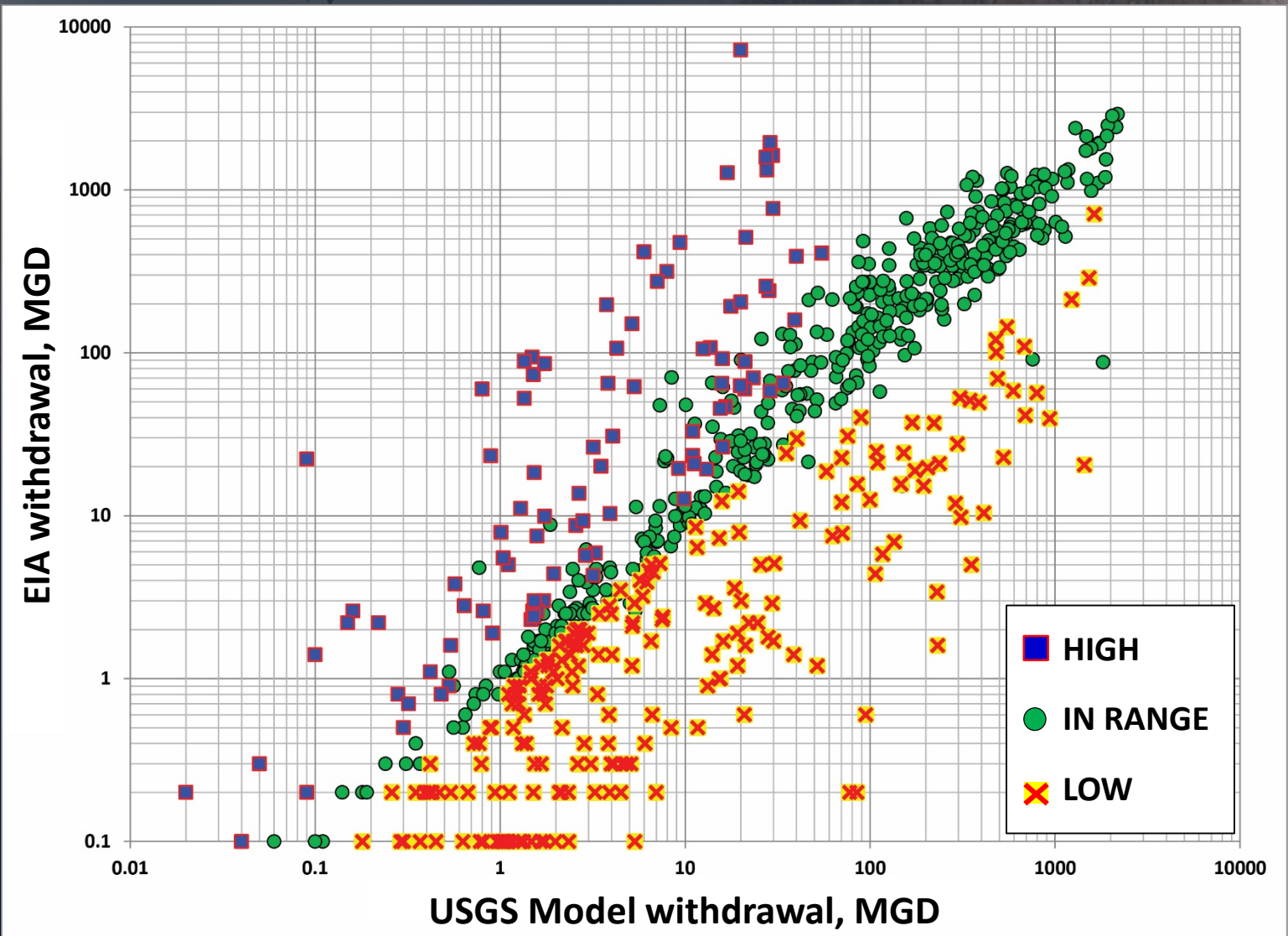
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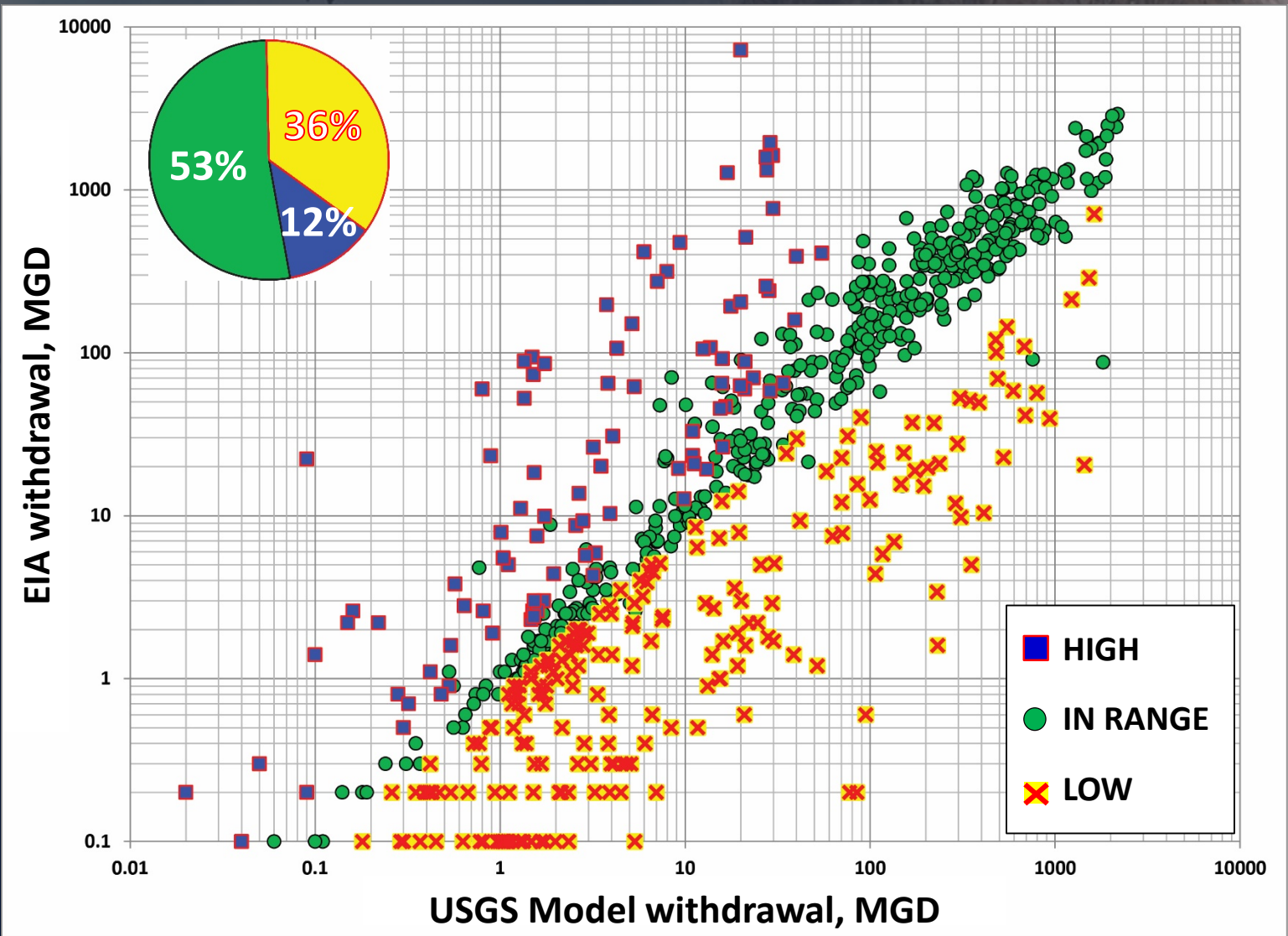


# EIA-reported withdrawal compared to model-estimated withdrawal ranges

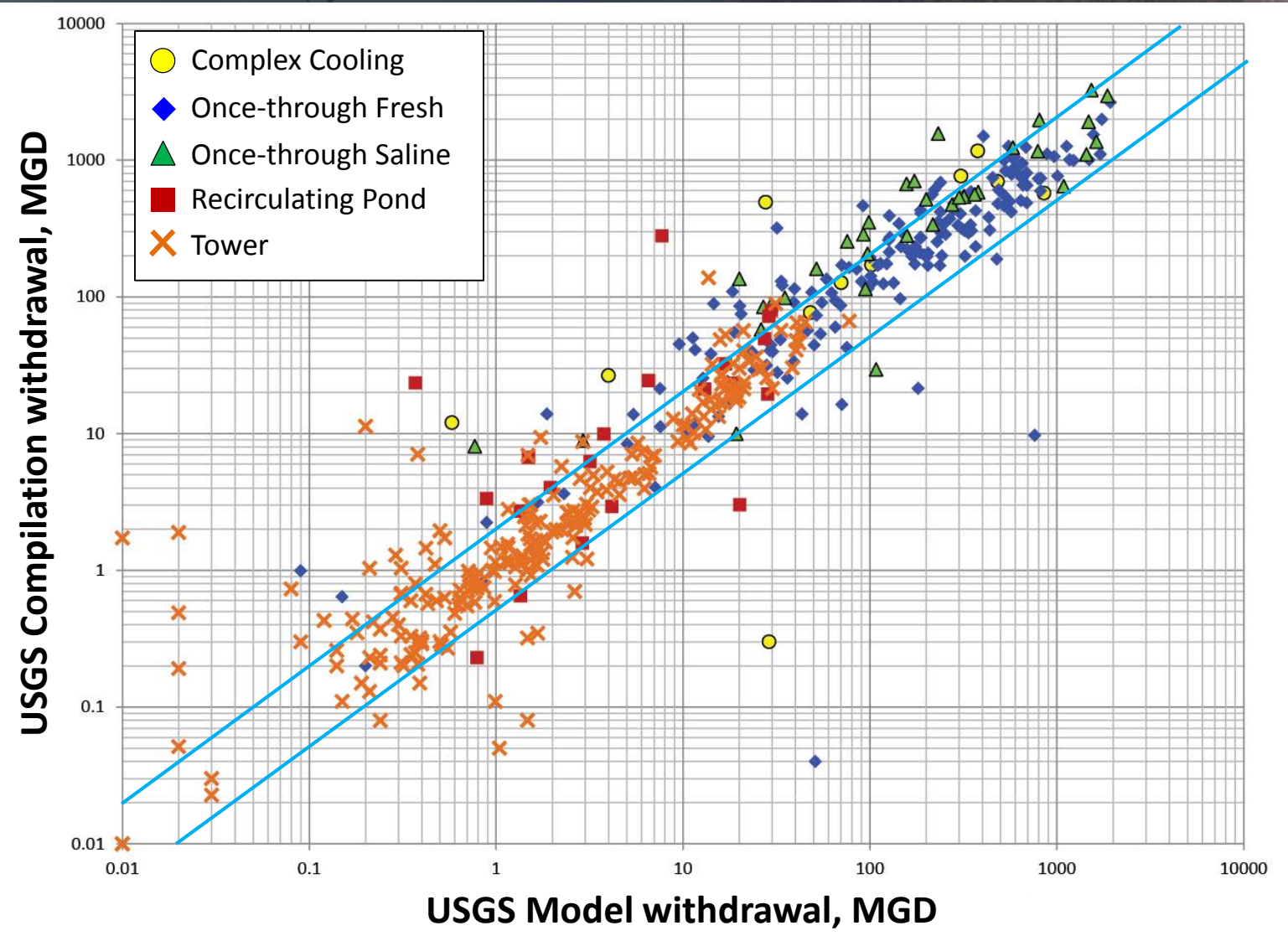




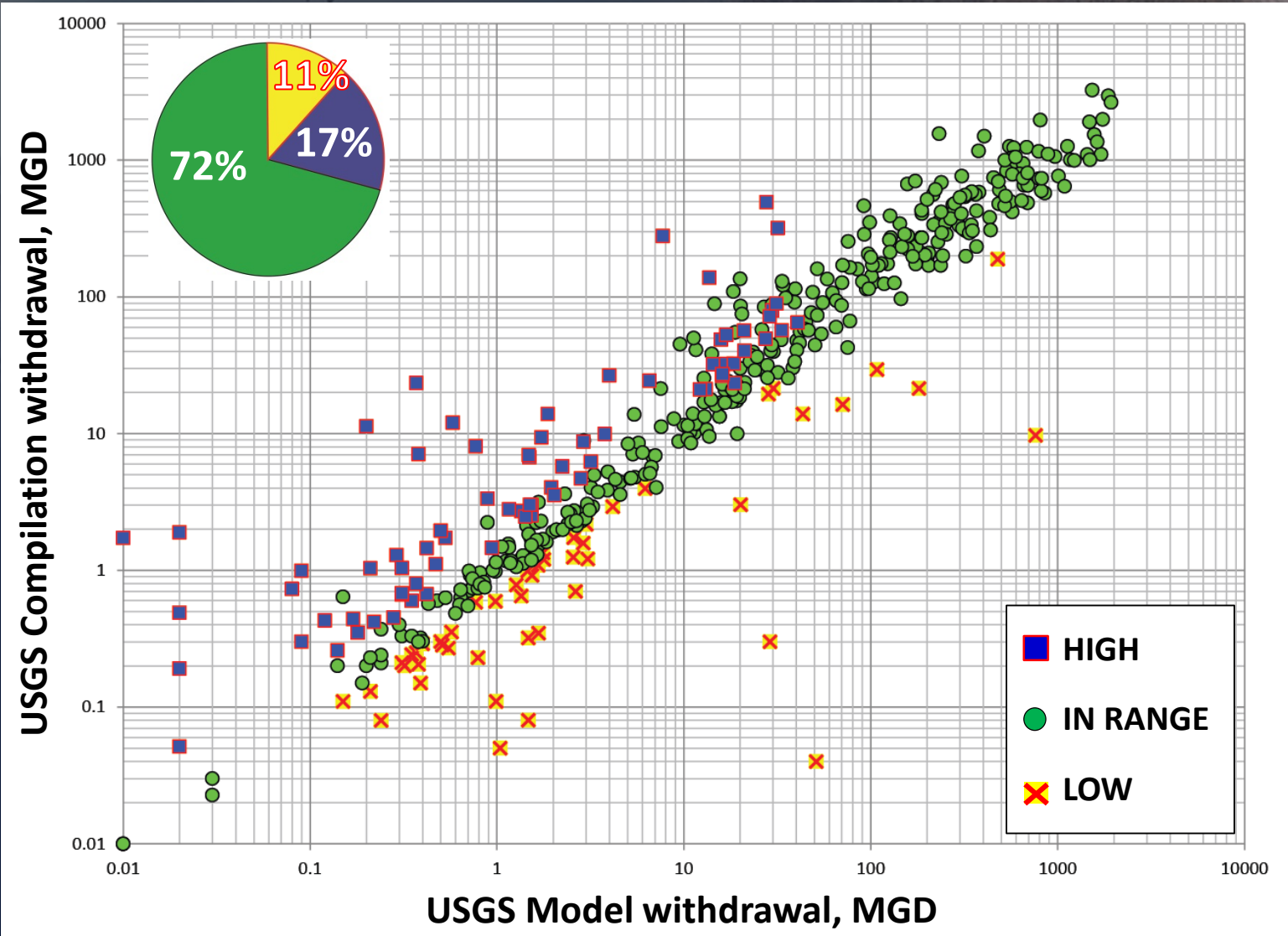
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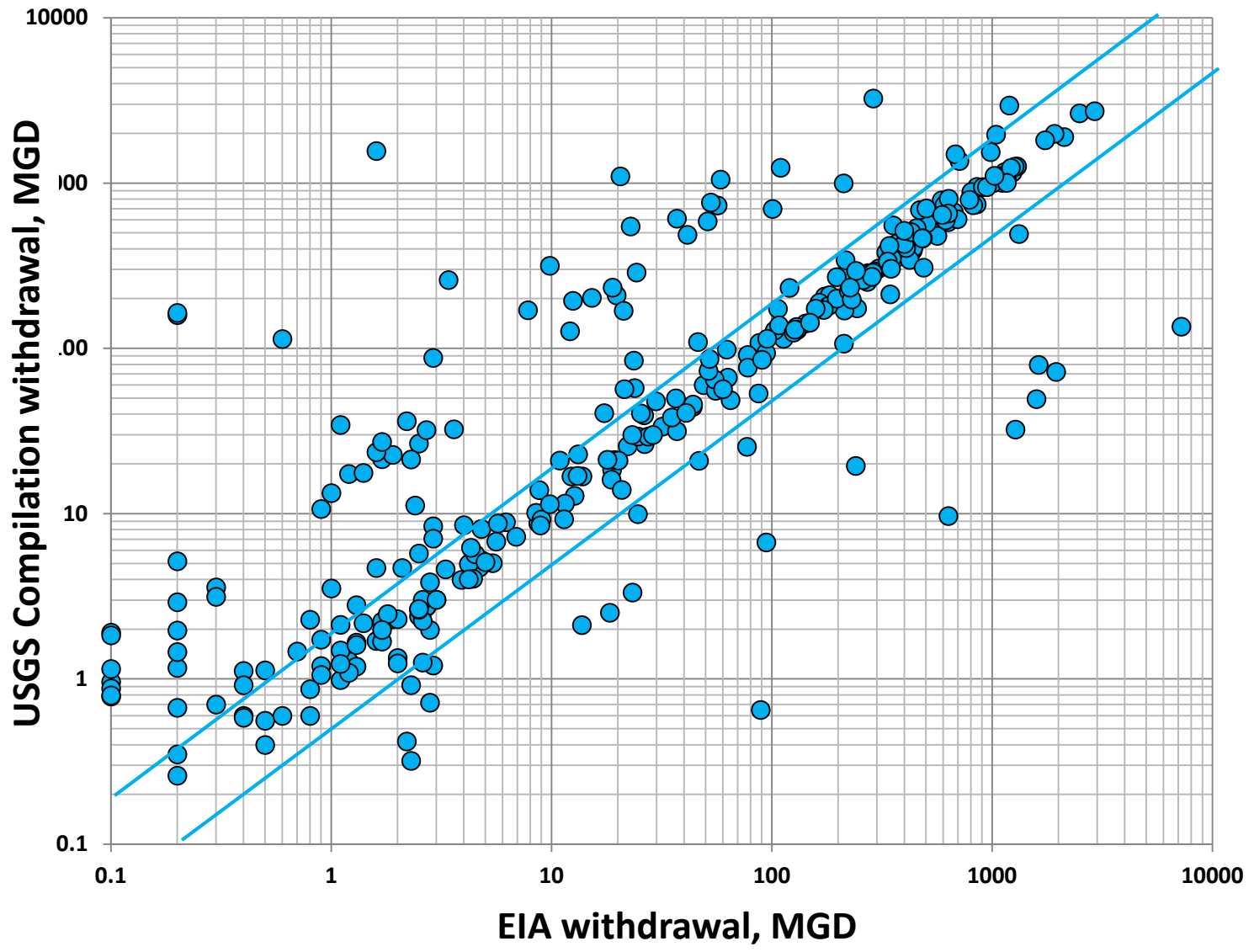
# 2010 Model vs Compilation withdrawal – 470 plants with same cooling-system type



# Compilation-reported withdrawal compared to model-estimated withdrawal ranges



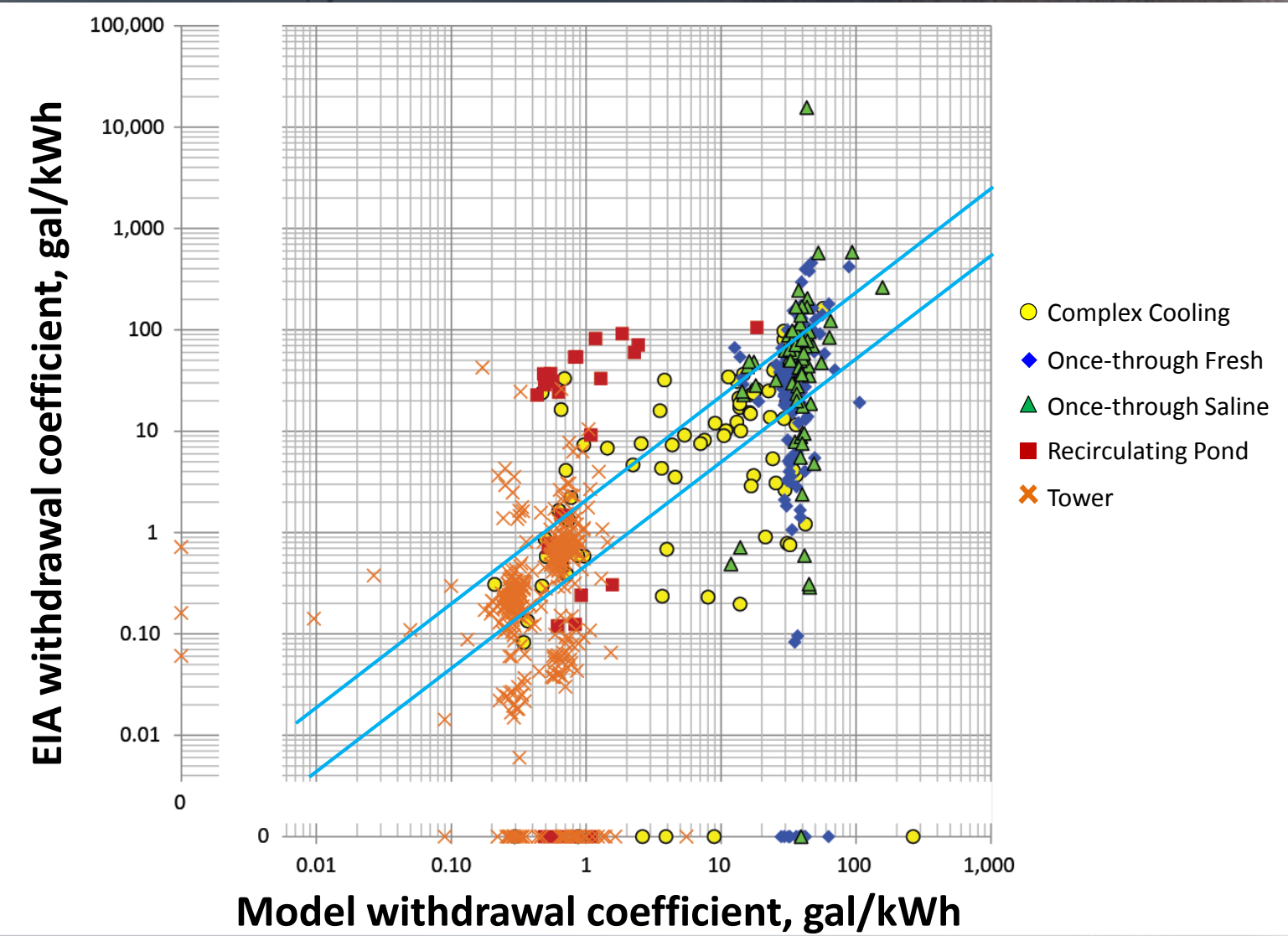
# 2010 EIA vs Compilation withdrawal – 362 plants with same cooling-system type



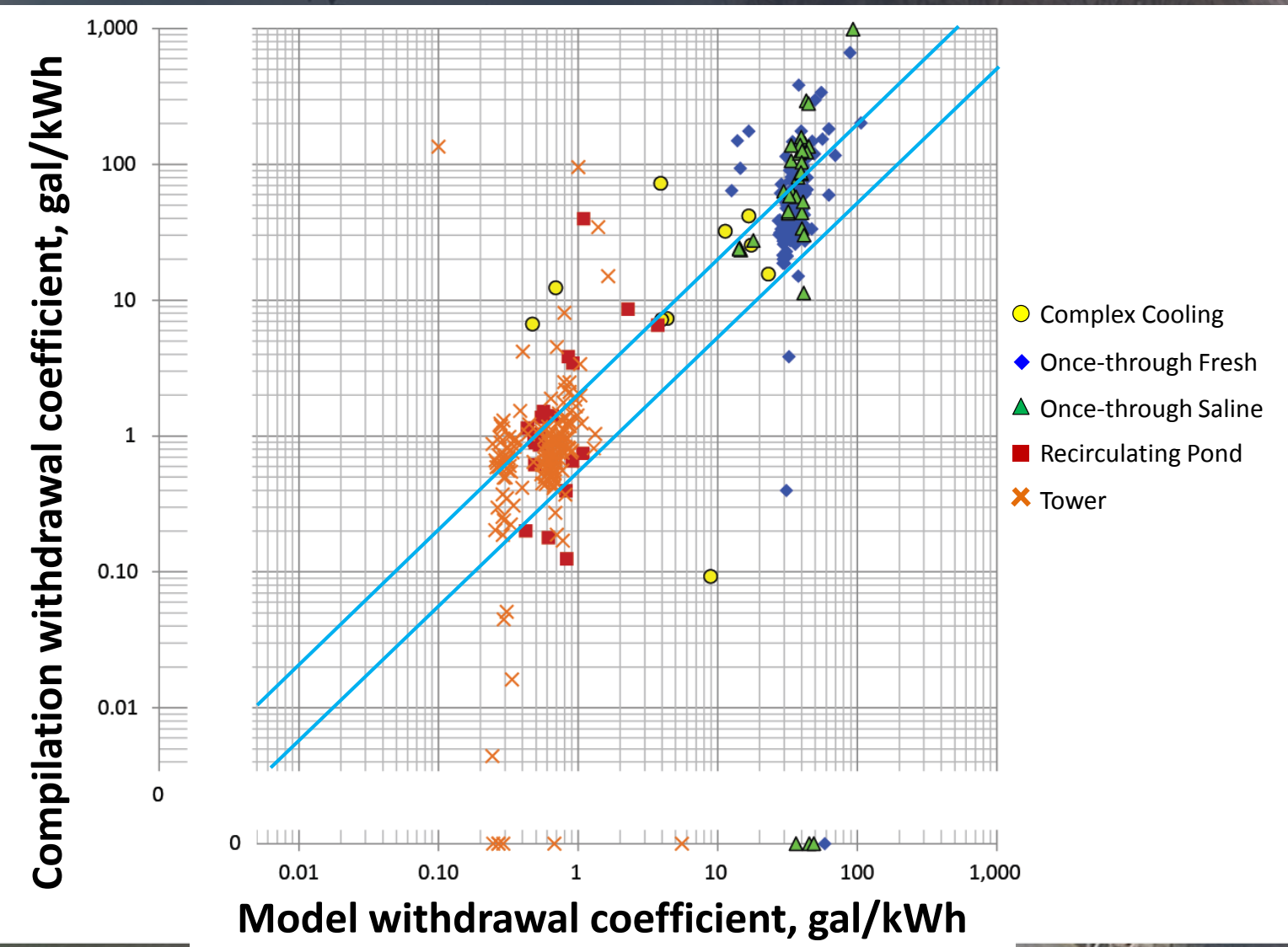


# COEFFICIENTS COMPARISON

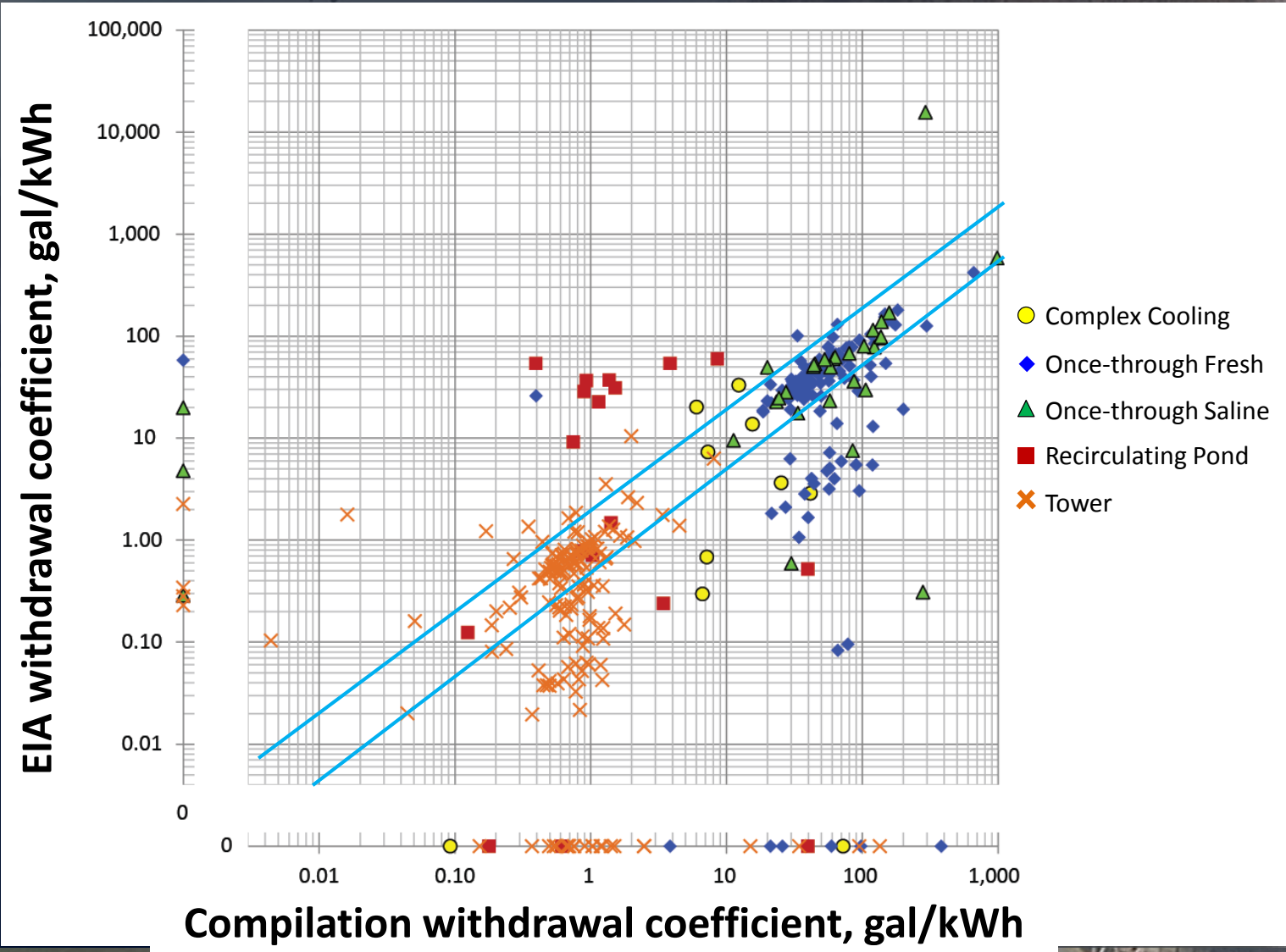
# Model vs EIA coefficients – same cooling-system type



# Model vs Compilation coefficients – same cooling-system type



# EIA vs Compilation coefficients – same cooling-system type

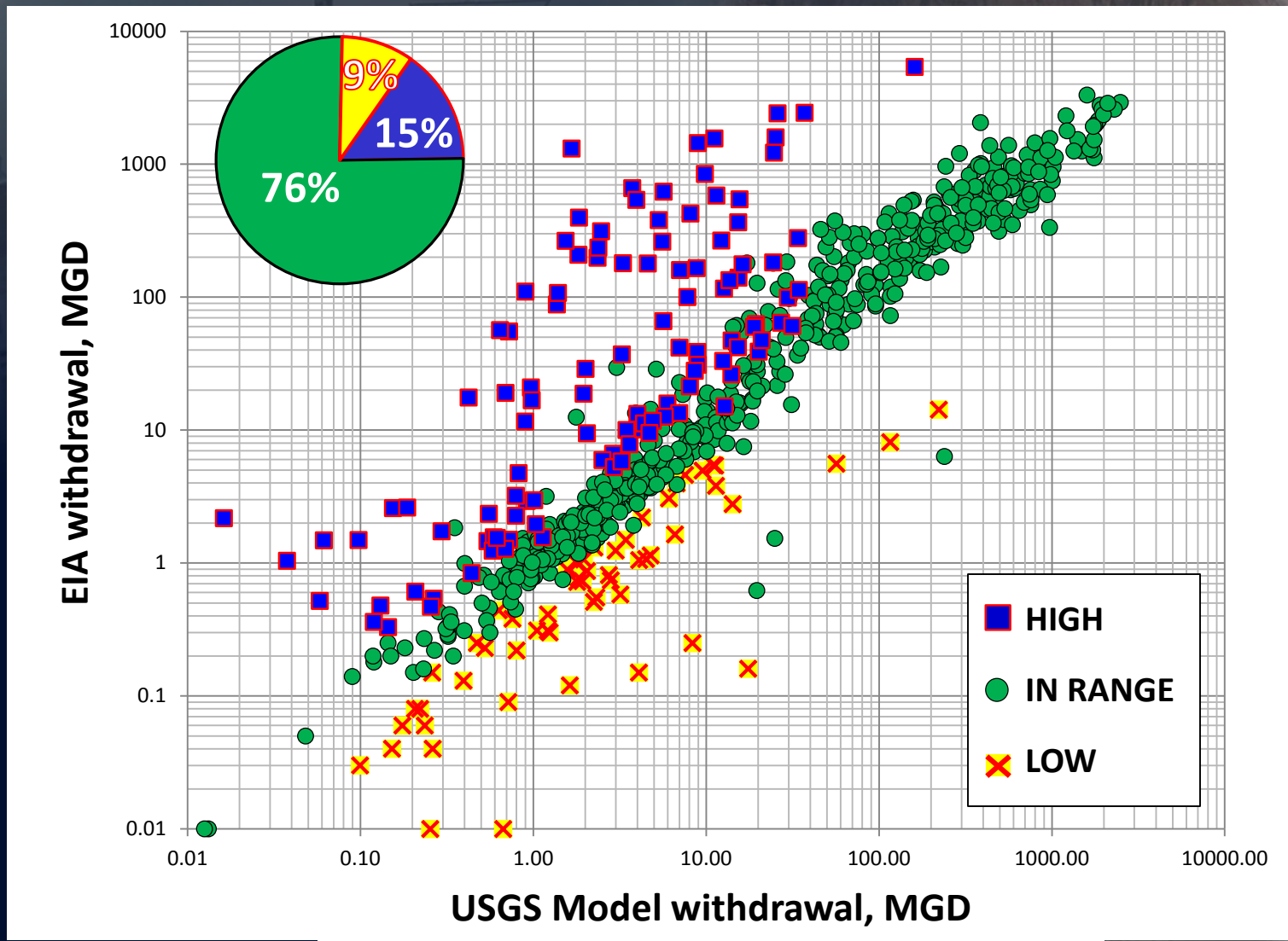




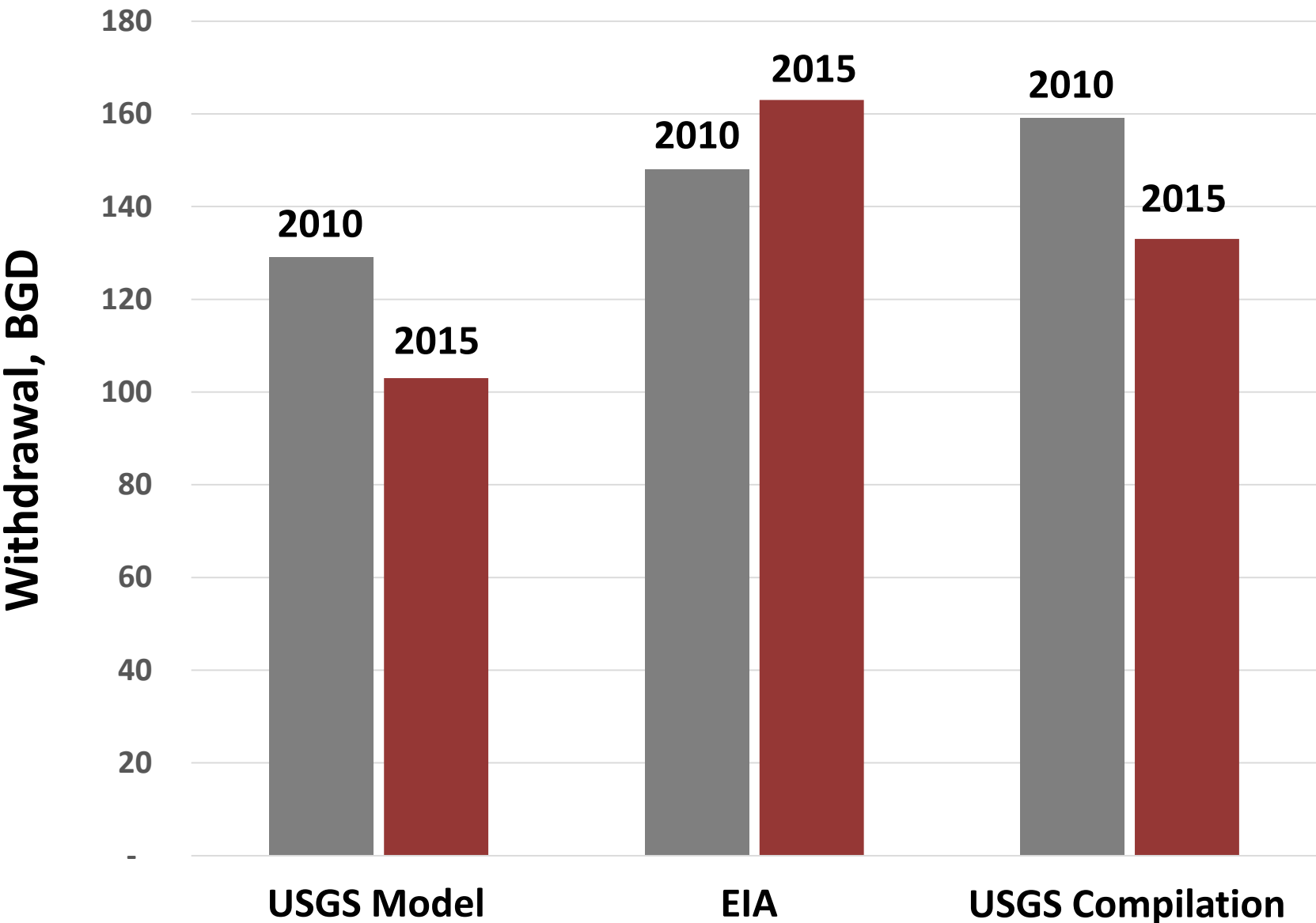


# 2015 – VERY BRIEFLY

# 2015 EIA-reported withdrawal compared to model-estimated withdrawal ranges



# 2010 vs 2015 National Total Thermoelectric Withdrawals



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- **Thoughts on improving data quality**

# Questions?

[mharris@usgs.gov](mailto:mharris@usgs.gov)

Harris, M.A., and Diehl, T.H., 2017. A Comparison of Three Federal Datasets for Thermoelectric Water Withdrawals in the United States for 2010. *Journal of the American Water Resources Association (JAWRA)* 1-19, <https://doi.org/10.1111/1752-1688.12551>

Harris, M.A., and Diehl, T.H., 2017, Thermoelectric power plant water withdrawals and associated attributes for three Federal datasets in the United States, 2010: U.S. Geological Survey data release, <https://doi.org/10.5066/F7HX19VW>