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# Energy Planning for Seawater Desalination Growth in the U.S.

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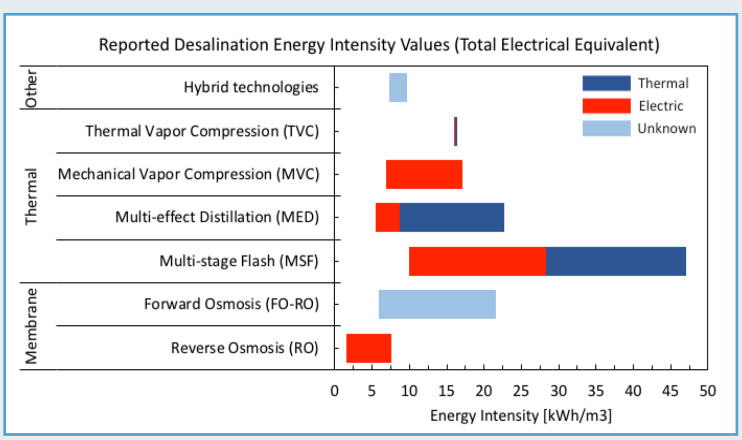
## Motivation

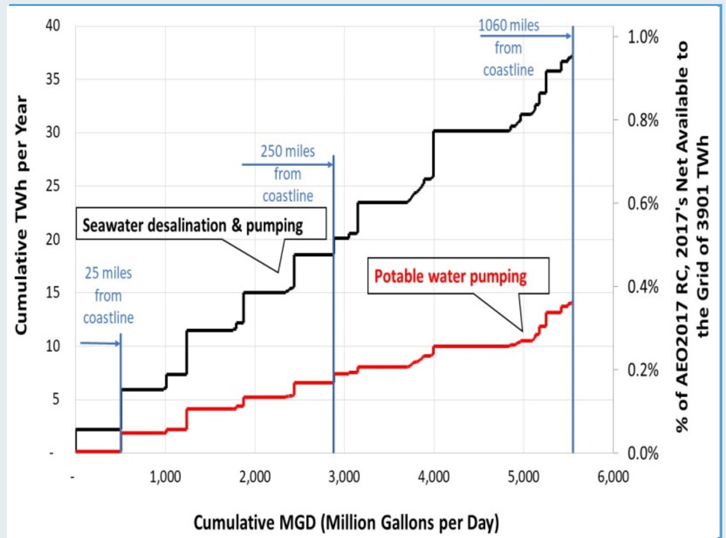
Forty of 50 state water managers expected freshwater shortages within their state in the next ten years under; 42 expect shortages in the next 10–20 years. As freshwater supplies decrease, alternative water options will need to be utilized, including seawater desalination. Currently, saline water (brackish and seawater) is used to meet less than 1% of U.S. potable water demand. Significant expansion of seawater desalination capacity in the U.S. will require significant infrastructure planning.

## Technological Challenges

Seawater treatment can be as much as 25 times as energy intensive as freshwater treatment. As a result, large increases in seawater desalination uptake will require coordination between energy and water planners. Projections of the energy requirements for increased capacity require a determination of future energy requirements and populations best served by seawater desalination.




*Energy intensities of various seawater desalination technologies.*




*Energy requirements for reverse osmosis -based systems providing 2010 public water supply to US counties with greater demand than freshwater replenishment rates.*

## Research

Extensive analysis was conducted to identify the most energy efficient desalination system available today. Regions in the U.S. with potentially insufficient freshwater supplies for meeting water demand were also determined. GIS mapping tools were employed to determine the energy requirements for serving U.S. populations living in these regions with desalinated seawater using the most energy efficient system available today.

Acknowledgements:
This work was funded by the US DOE.
Collaborators include: Arian Aghajanzadeh, William R. Morrow III, and Paul Sheaffer from LBNL; Caroline Dollinger and Sabine Brueske from Energetics; and Joseph Cresko from USDOE

References

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