

# Echo State Networks for Renewable Energy Forecasting

Samuel G. Dotson  
Advanced Reactors and Fuel Cycles Group

University of Illinois at Urbana-Champaign

November 17, 2020





# Outline

## ① Motivation

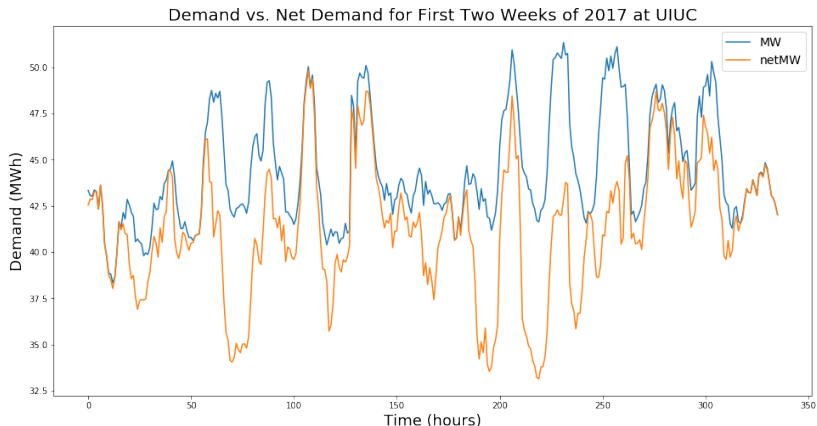
Rising Renewable Penetration  
Dilemma for Nuclear Power

## ② Methods

## ③ Results

## ④ Conclusion

# Rising Renewable Penetration



**Figure:** Comparison between total demand and demand accounting for renewable energy. “netMW” is the total demand minus wind and solar [1, 2].

# Dilemma for Nuclear Power



III



**Figure:** Traditional nuclear plants are like semi-trucks. They carry a lot of freight but can't turn very fast. Left: Byron Nuclear Station

# Outline

## ① Motivation

Rising Renewable Penetration  
Dilemma for Nuclear Power

## ② Methods

## ③ Results

## ④ Conclusion

# Outline

## ① Motivation

Rising Renewable Penetration  
Dilemma for Nuclear Power

## ② Methods

## ③ Results

## ④ Conclusion

# Outline

## ① Motivation

Rising Renewable Penetration  
Dilemma for Nuclear Power

## ② Methods

## ③ Results

## ④ Conclusion

## References I

[1] AlsoEnergy.

University of illinois solar farm dashboard.

<http://s35695.mini.alsoenergy.com/Dashboard/2a5669735065572f4a42454b772b714d3d>.

[2] UIUC.

Illini union energy dashboard : Week view.

<https://ednaweb.illinienergy.illinois.edu/post/IUnion/graph.html>.