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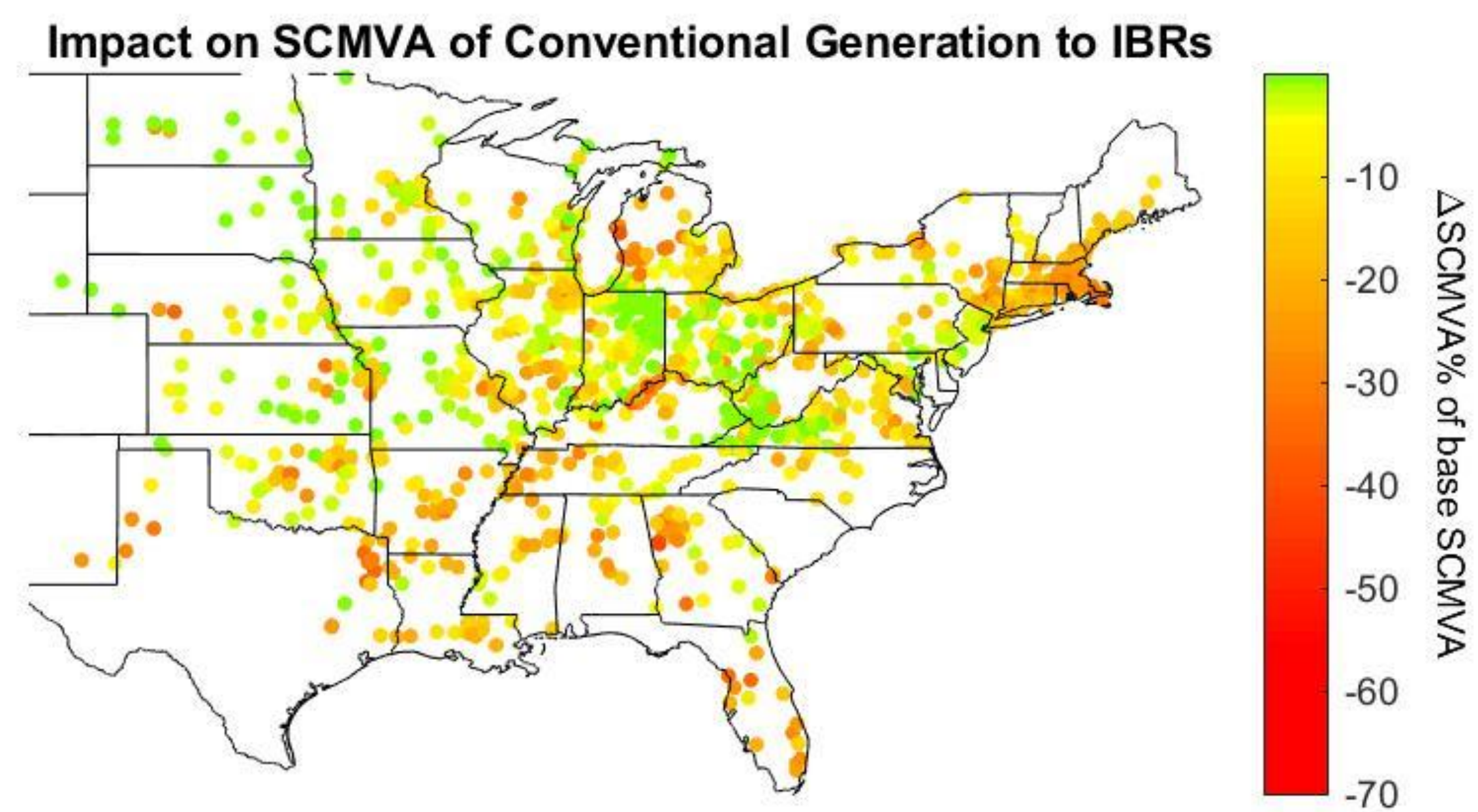
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Introduction

This project investigates the impact on the Eastern Interconnection grid strength that would result from replacing conventional generation with inverter based resources (IBR). It uses the short circuit power (SCMVA) as an indicator of grid strength, and compares SCMVA at different penetrations of IBR. Following that the potential for adding IBR without causing the grid strength to become weak was studied.

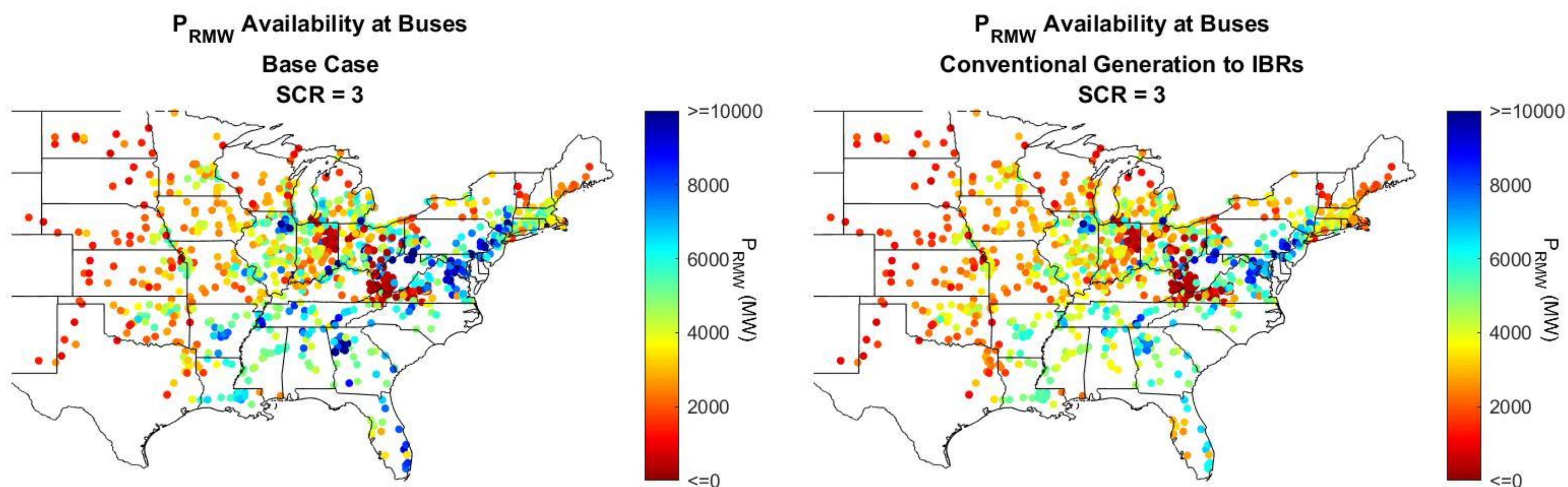
Grid Strength

This study was performed on the Multi-Regional Modeling Working Group (MMWG) 2025 Summer PSS®E case. For this study the conventional synchronous generators in each area were changed to IBR and the SCMVA was measured. This was repeated for each area until all the areas were tested. Then the difference in SCMVA was graphed to show how it is impacted by high penetration of IBR.



Potential of Additional IBR

The MMWG case was also tested to determine how much IBR could be added at each bus before the grid strength became weak. The previously calculated SCMVA was used along with the short circuit ratio (SCR) value for when a grid becomes weak, to calculate the maximum amount of IBR that could be added at each bus. The results were graphed on a map.



Future Work

For future work further quantitative analysis will be completed and the study will be performed for the Western Interconnection as well.

