SURPLUS INTERCONNECTION SERVICE

Unlocking Grid Reliability and Rapid Energy Deployment

Issue Brief for Decisionmakers

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GridLAB

Introduction

The U.S. electric grid is facing a triple threat of rising rates, rapid demand growth, and increasing reliability risks. These issues have wide ranging impacts on the future of America's economic growth, industrial competitiveness, and national defense. Meanwhile, there remain challenges to quickly bring enough power generation online to meet these threats and ensure the lights stay on. In recent years, adding new generation capacity has been hindered by long interconnection queue delays and supply chain disruptions. Surplus Interconnection Service (SIS), which allows new energy resources to connect to the grid using existing plant interconnections, can in many cases offer a solution to these problems and economically accelerate energy deployment to enhance grid reliability.

What is Surplus Interconnection Service

Many power plants only use the full capacity of their interconnection rights infrequently, leaving that interconnection capacity unused for most of the year. Surplus interconnection allows an additional resource to make use of that underutilized capacity. Surplus Interconnection Service (SIS), as defined by FERC Order 845, is the interconnection of a new power generation resource (including storage) that uses any unused portion of interconnection service already established in a Large Generator Interconnection Agreement. This allows a new electricity supply resource to use the existing interconnection rights and equipment without increasing the maximum power injected at the point of interconnection.

Sometimes referred to as "hybridization," SIS is aimed at allowing legacy generators to connect new resources at their existing site and operate simultaneously to avoid the interconnection queue and more efficiently utilize underused transmission infrastructure.

Surplus Interconnection Service can solve many problems facing the grid today

- **Help address rising electricity rates**
  This solution enables faster deployment of new power generation, driving down costs through increased competition and supply. In addition, by leveraging existing underused infrastructure, customers and businesses can benefit from more affordable electricity rates.
- **Boost grid reliability**
  SIS can rapidly add new, diverse sources of generation to the grid, mitigating reliability concerns arising from aging plants and increasing electricity demand. This can help create a more robust, reliable, and resilient grid.
- **Provide economic benefits for American families and local economies**
  Surplus interconnection can preserve jobs and tax revenues in energy communities instead of letting aging facilities become stranded assets, while making these areas more attractive to new business operations.
- **Cost Savings for Power Plant Owners**
  Many fossil fuel plants are uneconomic and operate at lower capacity, with some running less than 20% of the time. At the same time, these plants remain critical during extreme weather events or grid outages. Surplus Interconnection Service could allow power plant owners to create new revenue streams either by leasing their existing grid connections or developing new generation projects themselves at their interconnection points. This market-driven approach helps energy companies diversify their portfolios while maintaining reliable backup generation capacity and creating additional value from their existing assets.
- **More Efficient Use of Infrastructure**
  SIS minimizes the need for new transmission infrastructure, resulting in cost and land use savings for energy developers and communities.

Potential for Surplus Interconnection Service

Researchers at UC Berkeley have estimated that there is a technical potential of over 850 GW of new generation that could be cost effectively connected at existing generation sites across the country using SIS without going through interconnection queues. In addition, researchers found that local solar energy's levelized cost of energy (LCOE) is now cheaper than the variable operation costs for over 75% of existing thermal power plants. This creates an opportunity for grid planners to rapidly increase energy assets on the system while simultaneously reducing wholesale energy costs and without losing access to existing firm capacity resources.

Looking ahead, an additional 150 GW of solar and wind are forecasted to become cost competitive by 2030 for a total of 1,000 GW that can be cost effectively connected using existing interconnections, saving $85 billion in interconnection costs. Researchers identified over 200 GW of US fossil capacity that operates under 15% capacity factor (actual energy generated/energy

TWO SOLAR PROJECTS IN KANSAS

One 42 MW solar project in Harper County utilized surplus interconnection service and incurred just $30,000 in interconnection costs and was able to come online in less than three years. Conversely, a 103.5 MW solar project in neighboring Sumner County that went through the standard interconnection process incurred a cost of nearly $35 million and remains in the queue after seven years.

generation potential) which could be the starting candidates for new resource interconnection. Implementing policy solutions to overcome the commercial and regulatory barriers can unlock this enormous potential and allow energy suppliers to leverage existing interconnections to offer lower costs and improved reliability.

Successful Implementations of Surplus Interconnection Service

SIS has been successfully implemented in several markets in the U.S. and is a **ready-to-go solution**. These regions have active SIS queues and have completed interconnection of surplus energy projects:

- **Midcontinent Independent System Operator (MISO)**
  The MISO region allows surplus interconnection service to be used when it does not trigger new network upgrades. As of January, 2025, MISO has completed 24 requests for a total of over 2 GW of new energy resources and has over 36 requests (3 GW) pending in its SIS queue. Projects using surplus interconnection service in MISO include projects in jurisdictions as diverse as Indiana, Minnesota, and Texas.

- **Southwest Power Pool (SPP)**
  The SPP region has also seen successful use of surplus interconnection service, particularly with solar projects. SPP has expanded their surplus interconnection service process to allow requests even when certain types of transmission infrastructure upgrades are needed, so long as there are no material adverse impacts on the cost or timing of other requests pending in the standard interconnection queue.

- **Non-RTO West**
  Several utilities in the Western Interconnection have implemented SIS processes based on FERC Order 845, which reformed the interconnection process for large generators. For example,

Pacificorp has an established SIS queue with over 3,900 MW of proposed interconnection made up mostly of battery storage and solar.

Barriers to Surplus Interconnection Service

While SIS is already sparking interest and action from policymakers, a lot more needs to be done to pave the way for this solution to take hold and rapidly close the gap between energy supply and demand. Despite its potential, several barriers hinder widespread SIS adoption:

- **Restrictive Study Processes**
  Some grid operators impose strict evaluation requirements that limit SIS projects to those with minimal transmission system impacts, barring a wide range of projects that would not cause reliability issues or harm the standard interconnection queue. This restricts the use and potential benefits of SIS.
- **Reliance on Incumbent Generator Owners**
  The current regulatory framework relies on existing generation owners to voluntarily share their interconnection rights, which may require the incumbent owners to pivot their business model and renegotiate energy agreements.
- **Tied to Existing Generation**
  SIS is contingent upon the continued operation of the existing power plant, creating uncertainty for long-term project viability.
- **Contractual Complexity**
  Surplus interconnection requires agreements that govern coordination of interconnection rights, operation, and dispatch.
- **Financial Obligations**
  Financing, tax equity, and offtake structures introduce transactional costs to using surplus interconnection.

Policy Recommendations

To promote broader implementation of SIS, policymakers and regulators should consider the following recommendations:

FEDERAL LEADERSHIP

- **Standardize and Enforce SIS Rules**
  FERC should establish clear and consistent rules for SIS, ensuring that all utilities offer a minimum level of service and that study processes are reasonable and not overly restrictive.
- **Streamline Contractual Agreements**
  Standardized pro forma agreements or a clearinghouse of model contracts could reduce transaction costs and facilitate SIS agreements.

ISO/RTOS AND UTILITIES

- **Implement Workable SIS Processes**
  Grid operators should proactively develop and implement SIS processes that are transparent, efficient, and aligned with regional needs.
- **Address Long-Term Viability**
  Grid operators should provide clear pathways for SIS projects to transition to standalone interconnection service if the host facility retires.
- **Provide Visibility**
  Grid operators should release GIS tools that identify SIS capacity or add an SIS layer to interconnection heat maps to aid developers and utilities to site new generation efficiently.

STATE REGULATORS

- **Integrate SIS into system planning**
  State regulators should require utilities to prioritize SIS opportunities in integrated resource planning and competitive procurements.
- **Prioritize SIS to address reliability concerns**
  State regulators can require that SIS, specifically to add storage, is considered as an option to rapidly address near-term energy shortfalls.

GOVERNORS AND STATE LEGISLATORS

- **Address siting and permitting barriers**
  States can streamline siting and permitting processes for SIS projects, particularly those with minimal land-use impacts.
- **Encourage Conversion of Uneconomic Assets**
  Legacy resources are becoming increasingly uneconomical, but many remain critical during

periods of capacity need. States can explore incentives to encourage owners of underutilized legacy plants to monetize their interconnection capacity through SIS while retaining their ability to provide capacity during grid emergencies.

- **Engage in ISO/RTO regional planning stakeholder processes**

  Ensure that rules for SIS are fair and encourage maximum use of existing interconnection capacity.

LOCAL GOVERNMENTS

- **Facilitate power plant conversions**: Local governments can implement zoning and permitting rules that support new energy development near existing infrastructure.
- **Keep financial benefits within the community:** Local governments can help establish mutually beneficial deals where property tax from surplus resources is directed to local projects.

Conclusion

Surplus Interconnection Service offers a pragmatic and effective solution to accelerate clean energy deployment, enhance grid reliability, and lower electricity costs. By implementing supportive policies and addressing existing barriers, policymakers and regulators can unlock the full potential of SIS and facilitate a more sustainable and resilient energy future.

Additional Resources

Scarcitytosurplus.com

ReSISting a Resource Shortfall: Fixing PJM's Surplus Interconnection Service (SIS) to Enable Battery Storage; Gabel Associates Inc. September 17, 2024

No-Regrets Solutions for Accelerating Grid Interconnection; Synapse Energy Economics, Inc.; August 19, 2024

Clean Repowering: A Near Term, IRA-Powered Energy Transition Accelerant; RMI; January 16, 2024

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GridLab is an innovative non-profit that provides technical grid expertise to enhance policy decision-making and to ensure a rapid transition to a reliable, cost effective, and low carbon future.

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