EPRI Energy and Environmental Analysis Group Research on the Value, Costs, and Impacts of Electricity Storage Technologies

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This is a summary of all of EPRI's Energy and Environmental Analysis (EEA) Group's research on the economics of electricity storage technologies, including work in progress. Web links are included where available. Publications marked with an * are available to the public free of charge, or are published in academic journals. Other publications are available to EPRI member companies that fund certain program(s), as indicated with a number in brackets preceding the publication title and can be purchased by members of the public who may be interested in doing so, subject to EPRI's product distribution requirements. For a full list of EEA research, please visit the EEA public website at http://eea.epri.com/research.html. To receive the EEA group's quarterly newsletter with research updates, please email your request to eea@epri.com.

EEA storage research focuses on use of storage for energy arbitrage, capacity value, and for spinning or non-spinning reserves, and takes into account the feedback effects of increasing storage penetration on electricity prices and how storage changes the economics of generation technologies. There are other potential value streams for storage, such as frequency regulation and transmission deferrals, which are the subject of research by other programs at EPRI such as P94.

Emissions Impacts of Energy Storage

** In Progress: Academic paper on "**Emissions Impacts of Future Battery Storage Deployment on Regional Power Systems**" submitted to 'Nature Communications' as of May 2019.*

*(201-C) **Program 201-C Webcast on Storage Research Highlights**, March 2019, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=1712F9F9-2D76-401D-B5C8-74591E7B57F1 (webcast recording also available via this link)*

*(201-C) **Program 201-C Webcast on Economics of Energy Storage Dispatch and Emissions**, July 2018, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=EF380252-6663-4A43-A960-4BC511E39F62 (webcast recording also available via this link)*

Renewable and Storage Interactions

*(201-C) **Program 201-C Webcast on Storage Research Highlights**, March 2019, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=1712F9F9-2D76-401D-B5C8-74591E7B57F1 (webcast recording also available via this link)*

** In Progress: Academic paper on "**Drivers of Economic Wind and Solar Penetration in the United States**" submitted to 'Environmental Research Letters' as of March 2019. David Young presented on this topic at the International Association of Energy Economists conference in November 2017.*

** **Impact of Battery Storage on the Electric Sector Mix**, EPRI Program 201 Back Pocket Insight, March 2019, https://eea.epri.com/pdf/Back-Pocket-Insights/EPRI-P201-Energy-Storage.pdf*

(178-B) ***2018 REGEN Scenarios Analysis: Understanding Key Factors That May Impact Future Electricity Generation,*** *EPRI Report 3002013733, December 2018, https://www.epri.com/#/pages/product/000000003002013733/?lang=en*

(201-C) ***Program 201-C Webcast on Regional Renewable Penetration****, September 2018, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=6C586B9D-12E2-474B-8C04-B86F121F4F38 (webcast recording also available via this link)*

(201-C) ***Program 201-C Webcast on Economic Drivers of Wind and Solar****, January 2018, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=3EF76A32-FA8A-4664-8553-05C08A602DD2 (webcast recording also available via this link)*

** **Insights on the Complementarity of Storage and Renewables**, EPRI Program 201 Back Pocket Insight, October 2017, https://eea.epri.com/pdf/Back-Pocket-Insights/EPRI-P201-Storage-RE-Final.pdf*

(103) ***Program 103 Webcast on the Economics of Storage and Renewable Generation****, May 2017, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=933B40CA-3F6E-4ECB-9C75-B1C7AAEC9E8E*

** **Decreasing Returns to Renewable Energy**, EPRI Report 3002003946, January 2015, http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002003946*

Energy Storage Technology and Cost Assessment

(201-C) ***Program 201-C Webcast on Energy Storage Technology and Cost Assessment****, January 2019, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=0BDE834D-DADC-4FFD-A1C3-050E987F914C (webcast recording also available via this link)*

(201-C, 94-D) ***Energy Storage Technology and Cost Assessment,*** *EPRI Report 3002013491, December 2018, http://membercenter.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002013957*

** **Energy Storage Technology and Cost Assessment: Executive Summary**, EPRI Report 3002013958, December 2018, http://membercenter.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002013958*

Modeling Storage for Long-Term Planning

(201-C, 94-D, 173-C) ***Energy Storage Capacity Value Estimation****, EPRI Report 3002013957, January 2019, http://membercenter.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002013491*

(201-B, 201-C, 94-D, 173-C) ***Webcast on Evaluating the Capacity Value of Storage****, November 2018, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=1B2ADE0B-53B8-46C3-B852-442EBBD3CA78 (webcast recording also available via this link)*

(201-C) ***Program 201-C Webcast on Energy Storage Markets, Modeling, and Analysis****, May 2018, https://membercenter.epri.com/Programs/109396/pages/eventdetails.aspx?eventID=BCF4B08F-FCFC-4A40-A4B0-07E0F370442E (webcast recording also available via this link)*

** **Modeling Storage Investment and Dispatch with US-REGEN**, EPRI Program 201 Back Pocket Insight, October 2017, https://eea.epri.com/pdf/Back-Pocket-Insights/EPRI-P201-Storage-Modeling-Intro-Final.pdf*

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* ***Interpreting Storage Results in Capacity Planning Models****, EPRI Program 201 Back Pocket Insight, October 2017,* *https://eea.epri.com/pdf/Back-Pocket-Insights/EPRI-P201-Interpreting-Storage-Modeling-Final.pdf*

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