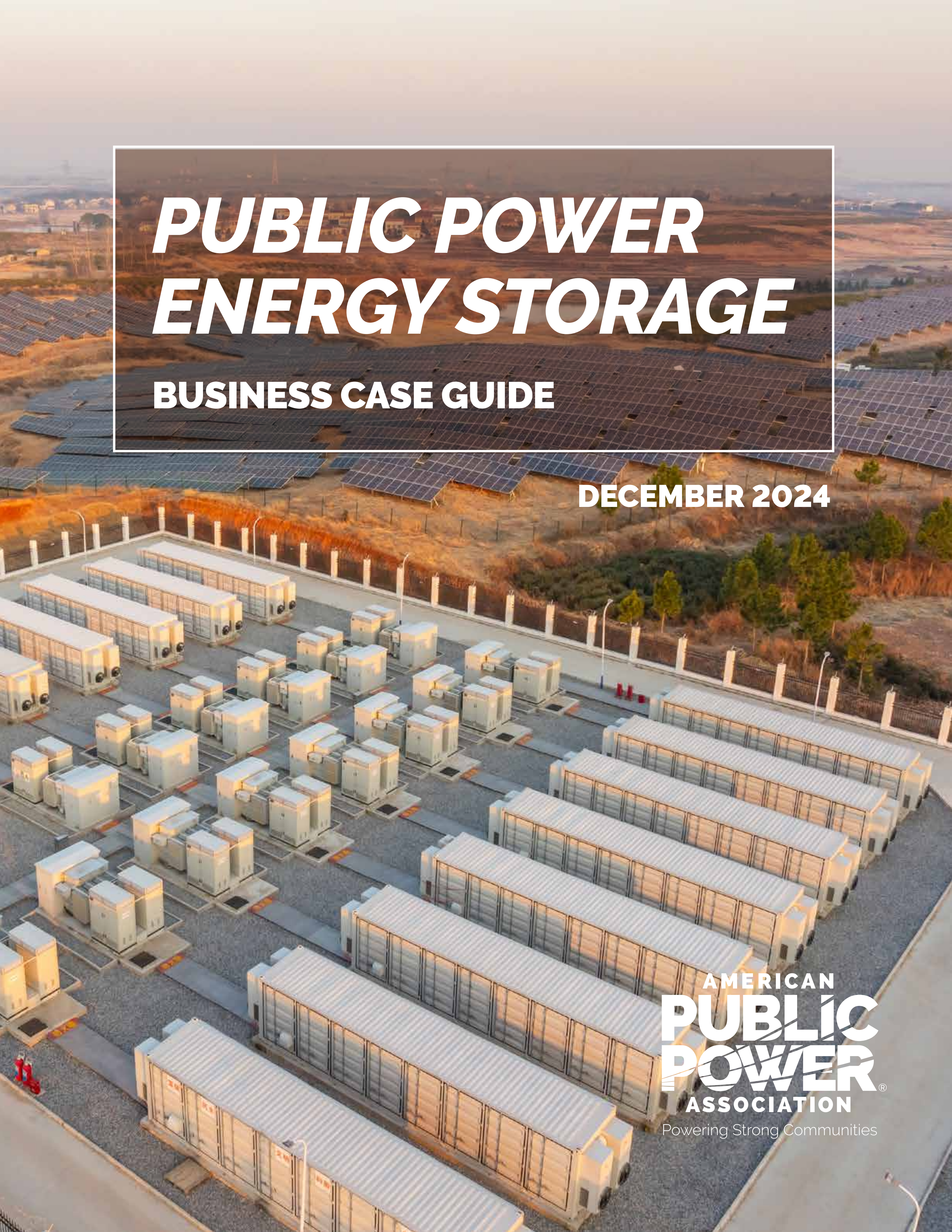
PUBLIC POWER ENERGY STORAGE

BUSINESS CASE GUIDE

DECEMBER 2024



AMERICAN PUBLIC POWER ASSOCIATION
Powering Strong Communities

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A full list of Energy Storage Working Group Members and contributors is included in the Appendix.

AMERICAN PUBLIC POWER ASSOCIATION
Powering Strong Communities

The American Public Power Association is the voice of not-for-profit, community-owned utilities that power approximately 2,000 towns and cities nationwide. We represent public power before the federal government to protect the interests of the more than 54 million people that public power utilities serve across the United States and its territories. We advise on electricity policy, grid technology and operations, and workforce development in support of safe, modern, and resilient utilities.

CONTENTS

HOW TO USE THIS GUIDE

A business case presents a recommended course of action to gain approval or support from decision makers. An effective business case explains the need, options, costs, risks, and benefits and provides a rationale for the preferred solution.

APPA recognizes that its members increasingly need to make the business case for energy storage to decision makers, including utility leadership, board members, city council members, and regulators.

APPA created this guide to help public power utility leaders to build business cases for implementing energy storage solutions.

This guide provides an outline of how a utility might want to structure its business case and what types of content to include. It includes methods for completing each section and considerations for a utility when developing responses.

The *Public Power Energy Storage Business Case Guide* may serve as a launching pad for utilities who are just beginning to develop a business case and, for utilities who are further along in the process, as a tool to validate thought processes, challenge assumptions, and ensure the creation of a comprehensive business case.

This guide is meant to be as thorough as possible, but when developing a business case, it is important to be concise and to only include the information that is most relevant to the individual project and most important to the decision makers to whom the case is being presented. Depending on factors, such as the motivation for the energy storage project, the system selected, the stage of development of the project, and the audience for the business case, a utility will likely want to include most, but not all, sections outlined. The guide recommends that the final business case be no more than 15 pages, excluding appendices.

The *Public Power Energy Storage Business Case Guide* was developed from APPA's Energy Storage Working Group meetings, a survey of Energy Storage Working Group members, and feedback from specific Energy Storage Working Group members about how they would use this type of guide.

BUSINESS CASE

Executive Summary

The business case should begin with a high-level executive summary. The executive summary is a concise version of the longer report, which helps the audience quickly understand the problem and proposed solution.

Decision makers receive numerous proposals and documents. They may or may not read an entire business case, so the most important details should be highlighted in the executive summary. The executive summary is also an opportunity to capture a decision maker's attention, so that a decision maker is more likely to read the document in full.

It is normally recommended to write the executive summary last, and it is acceptable to pull language from the full-length report. A good executive summary includes the following parts:

- **Introduction.** A strong opening paragraph should pique decision makers' interest in the report and provide context. The opening paragraph should clearly describe what is being asked of decision makers (e.g., approval, funding). The last sentence of the introduction may be a brief statement of the proposal for readers who might only read the first paragraph.
- **Explanation of the problem.** In one to two paragraphs, summarize the problem the utility is seeking to resolve. Define the problem in a way that decision makers, who might not have technical backgrounds, will be able to understand and explain the significance of the problem specifically in relation to its operations.
- **Explanation of the proposal.** In one to two paragraphs, briefly answer the questions: What is the solution being proposed? What are the major risks and benefits of this solution? How much will it cost? What is the anticipated return on investment?
- **Conclusion.** Close with a clear call to action that specifies what is being asked of decision makers (e.g., approval, funding) and why the utility is proposing the solution. If the business case is for informational purposes only, that should be specified, and conclude with the next step the utility plans to take.

The executive summary should be able to stand alone and is optimally kept to a single page but may extend to two pages. Consider using text boxes, bolding, formatting, and bullet points to make important information stand out.

Introduction

The introduction provides context for the business case. It should include an initial presentation of the problem being addressed and the solution being proposed.

It is often most effective to write this section after the main business case is fully developed to ensure that it accurately introduces the content that follows.

This section can differ widely depending on the circumstances of the organization, the problem the utility is looking to solve, its proposed solution, and other motivating factors. Here is sample language a utility might adapt for this section:

The introduction should be no more than one page long.

Demand for electricity is surging. Increased electrification, the growth of electricity demand from industrial customers and data centers, the proliferation of smart consumer appliances, prolonged heat waves, and extreme weather events are all putting new pressure on utilities to meet demand efficiently.

Simultaneously, [utility name] is moving quickly towards achieving energy transition goals by implementing methods for generating energy from renewable sources, such as solar and wind. However, the production of this energy is often mismatched with demand. Wind power generation, for example, peaks during the night, while electricity demand may peak during the day.

Energy storage reduces imbalances between energy supply and demand, improves reliability, and lowers electricity costs for customers by capturing energy at a point in time and reserving that energy for later use. Utility-scale energy storage solutions help address challenges posed by intermittent and distributed energy resources and can defer or eliminate more expensive infrastructure investments by reducing stress on aging grids.

In 2022, Congress recognized the advantages of energy storage and extended the Investment Tax Credit to qualifying energy storage technology, creating new opportunities for public power utilities to invest in these technologies.

[Name of utility] has extensively considered implementing an energy storage system. [Name of utility] has a need to [primary problem/motivation for investing in an energy storage solution]. A [proposed energy storage solution] would [how it would solve this problem], while [greatest single benefit beyond solving the immediate problem (e.g., lowering costs, addressing power imbalances, improving power quality, promoting the company mission)]. To move forward, [necessary next step (i.e., Is this document being submitted to obtain an approval? What is the utility's plan after submitting this business case?)].

Need

The "need" section details the problem(s) to be solved.

The problem(s) may have been identified through a strengths, weaknesses, opportunities, and threats, or SWOT, analysis, other business analysis, or an energy storage-specific assessment like APPA's Public Power Energy Storage Maturity Model.

The problem(s) should be defined here in relation to the specific and unique challenges faced by the utility and its customers.

This section may include some combination of the following challenges, as well as others specific to the utility's circumstances. Listed below each challenge are additional questions the utility will want to consider when completing this section. Regulations, policies, and mandates should be included where relevant.

Peak Load Management

- Why is peak load management important to the utility?
- Why is the utility experiencing an imbalance between supply and demand?
- How significant is the imbalance?
- Is the imbalance likely to worsen?
  - Why?
  - What implications would that have?

Improved Grid Reliability/Resilience

- Is the utility's system already suffering from reliability problems?
  - If so, when, how often, and for how long?
  - To what extent were customers or utility operations impacted?
- What evidence is there that the grid may suffer reliability issues in the future (e.g., increased maintenance demands, modeling)?
- How significant are future reliability problems anticipated to be?
- How many customers or meters are likely to be impacted at a time?
  - For how long?
  - How often?
- What would be the cost of solving these reliability problems if preventive action is not taken?

Integration of Distributed Energy Resources

- What are the utility's plans regarding the integration of renewable resources?
- What plans exist related to electric vehicles and other DER?
- What challenges are anticipated in attempting to integrate DER?
- How might energy storage impact the integration of DER in the utility's system?

Cost Reduction

- What are the most significant factors driving costs for the utility?
- How might energy storage reduce costs?

Retirement of Fossil Generation

- Why does fossil fuel generation need to be retired?
- How might energy storage support accomplishment or acceleration of the utility's emissions reduction goals?
- What negative outcomes would result if the utility does not retire fossil plants or is not prepared to retire these by the established deadline?
- What challenges are anticipated because of retiring generation assets?
- How might energy storage impact the management of fossil resource retirements?

System Congestion and Constraints

- Is the utility currently experiencing transmission or distribution congestion, or is this an anticipated problem?
- At what frequency is congestion occurring, and how many customers are being impacted by transmission congestion or constraints?
- What are the utility's projections for future congestion?
- What are the negative impacts of transmission or distribution constraints and congestion on the utility's business model and on its customers?

This section should be one to one and a half pages, depending on if there are multiple challenges the utility is seeking to address with an energy storage solution.

Potential Solutions

This section lists the array of solutions the utility considered to address the stated need, including solutions that are not energy storage.

This demonstrates to decision makers that the utility has carefully examined options to determine that energy storage is the most appropriate solution and makes the case for why the alternatives, including taking no action, would be inadequate or inappropriate.

It is not necessary for utilities to include a comprehensive list, but this section should include the potential solutions that were given substantive consideration and/or have realistic potential to be implemented with successful outcomes. Each solution should be presented using similar criteria (e.g., cost, timeline, risks) so that the pros and cons of the various solutions are evident and clear to compare.

It may be effective to present potential solutions in a table. The example in Table 1 includes some of the potential solutions utilities may want to compare.

The table should fit on one page. If there is more content than fits within those parameters, a more detailed version can be included in the appendices.

Table 1. Summary of Potential Solutions (Example)

Solution	Advantages	Cost	Timeline	Risks
Energy Storage				
Adding Generation				
Diesel Backup				
No Action				

Proposal

The proposal is the specific plan of action that the utility is making the case for pursuing. It identifies which of the potential solutions is the preferred option.

The proposal should be broken out into its own section and be as specific as possible so that a decision maker quickly reading the business case can easily locate it and understand exactly what is being proposed.

It may be helpful to frame the proposal by restating the problem it aims to solve. If a specific energy storage technology has already been selected, it should be named. A sample structure of the proposal could be:

The installation of [an energy storage system/ proposed energy storage technology] will allow [name of utility] to effectively [problem to be solved (e.g., match solar distributed generation with electricity demand)].

This section may be brief, potentially just one to three sentences.

Benefits of the Proposed Solution

In this section, the specific benefits of the energy storage solution are explained in detail. It is the most important section of the business case.

While the general pros and cons in comparison to alternative solutions were presented in the "potential solutions" section, the benefits section justifies the case for energy storage. This section should answer the question, "Why energy storage?"

This section should:

- Explain why energy storage is the most effective solution for addressing the need
- Provide additional detail and context for the advantages stated in the potential solutions section
- Explain how an energy storage solution fits into the utility's business strategy and/or mission statement
- Include any additional benefits to an energy storage solution, such as resilience, the promotion of transportation electrification, and tax advantages

The following sample language, drawn from APPA's Energy Storage Maturity Model Framework Report, can be used to describe the benefits of the proposed energy storage project.

This section should be one to two pages.

Grid Reliability

The proposed energy storage solution will enhance stability and resilience. The energy storage system can store excess electricity generated during periods of low demand and release it during peak demand, thereby reducing strain on the grid. This helps to balance supply and demand and mitigate power fluctuations. The proposed system may, depending on size and type, contribute to critical grid functions, such as black start; ensuring swift power restoration after blackouts; voltage support; maintaining consistent voltage levels; frequency regulation; responding to frequency deviations for stable electric distribution; and can serve as spinning and non-spinning reserves, providing immediate energy access to maintain grid reliability. By optimizing this new system, particularly in managing peak demand, the need for immediate infrastructure upgrades to enhance the overall stability and reliability of the grid can be deferred.

Renewable Integration

The proposed energy storage system will facilitate consistent and predictable energy supply, reducing reliance on fossil fuels and lowering emissions. Renewable energy sources like [existing or proposed solar or wind facilities] often have intermittent or variable output, which can be challenging to manage, as the optimal times for production often do not coincide with peak demand. The proposed energy storage solution allows for increased integration of intermittent renewable energy sources by storing any excess energy produced during times of high production that can be used when generation is low. Thus, the proposed system enables a more consistent and predictable energy supply and allows for more value to be extracted from renewable sources. This will continue to promote adoption of renewable energy generation and reduce reliance on fossil fuels, resulting in reduced greenhouse gas emissions and a more sustainable energy mix.

Demand Management and Load Shifting

The recommended energy storage solution optimizes energy usage, reduces costs, and alleviates strain on the grid during peak periods. By engaging in energy arbitrage, which involves storing electricity during off-peak hours (when prices are low) and discharging it during peak demand periods (when prices are high), the system can optimize energy usage and reduce costs. These reduced costs translate into lower electric bills for customers, factoring in the value of capital costs over the investment period. This peak shaving/load shifting approach also alleviates strain on the grid during peak periods, leading to more efficient utilization of existing infrastructure.

Resilience in Withstanding Disruptive Events

The proposed energy storage solution enhances the resiliency and reliability of decentralized energy systems. In remote or isolated areas of our service territory, the energy storage system can provide backup power during outages or disruptions, ensuring continuous energy supply. The solution will also support microgrids, allowing our community [or key facilities/customers] to operate independently from the main grid if necessary. This improves energy security and allows for continued provision of critical services during natural disasters or other emergencies.

Promoting Transportation Electrification

The proposed energy storage solution enables efficient electric vehicle charging infrastructure and accelerates the transition to more sustainable transportation options in our service territory. The system can support the growth of EVs by mitigating the demand for EV charging. By absorbing excess electricity from renewable sources and supplying it to charging stations, the energy storage system can help offset demand charges and minimize the necessity for extensive grid upgrades. Reliable charging experiences that minimize impacts on the rest of the grid encourage EV adoption among our customers, which in turn accelerates the transition to more sustainable transportation sector.

Technology

The content included in this section is dependent on the utility's stage of development.

If the utility has selected a particular energy storage technology, it should be named in the proposal section and described in this section.

If a technology has not yet been selected, brief descriptions of the available technologies can be included in this section. It is not necessary to include every energy storage technology, but it is recommended to include those that are most likely to be considered for this project. Table 2 outlines some of the technologies that may be appropriate to address.

When writing this section, it may be helpful to consult APPA's Public Power Energy Storage Tracker to learn more about what types of technologies other utilities are deploying and to be able to point to evidence of successful projects.

Decision makers may or may not have technical backgrounds, so the language in this section should be written with minimal technical terminology and jargon.

If multiple technologies are being considered, each can be explained in one to two paragraphs or presented in a table, as above. If a single technology is selected, this section should be no longer than one page.

Table 2. Energy Storage Technologies

Type	Description	Applications	Unique Attributes	Maturity
Pumped Storage Hydro	Dual water reservoirs, separated by an elevation	Grid balancing, firming renewables, black start	High capacity, long duration	Fully mature
Lithium-Ion Batteries	Ions move through an electrolyte solution, between an anode and cathode.	Equipment- and facility-level backup power, microgrids, utility-scale application	Scalable deployment at equipment, facility, and grid levels	Fully mature
Flywheels	A large rotating mass spins with minimal friction, providing on-demand power.	Equipment- and facility-level backup power	Long lifetime, no degradation	Fully mature
Flow Batteries	Large-volume liquid electrolyte solutions are mechanically pumped across a specialized membrane	Grid balancing, firming renewables	Decoupled power rating and discharge time	Demonstrations and early deployments in progress
Gravity-based storage systems	Large weights are lifted using excess energy. Weights are lowered to turn generators when power is needed.	Grid balancing, firming renewables	Long-duration energy storage	Demonstration phase

Financials

Project Costs and Returns

This section discusses anticipated costs and returns. This is a key aspect of the business case for many decision makers because it quantifies the value of the energy storage project.

There are many methods for calculating and presenting costs and many software options available. Utilities should use their existing tools for evaluating infrastructure investments and present costs in a way that is appropriate to the utility's size, its standard accounting practices, and the energy storage project it is undertaking.

Utilities should consider incorporating a variety of financial analyses to provide the most comprehensive cost and payback picture for decision makers. These analyses may include capital expenditure (CapEx) analysis, operating expense (OpEx) analysis, net present value, internal rate of return, payback period, cost-benefit analysis, break-even or return on investment, and debt financing analysis. Some or all of these could be enhanced through sensitivity or scenario-based analyses that account for a variety of future possibilities.

For ease of reading, it may be effective to summarize costs by financial period (i.e., fiscal year) and include a detailed spreadsheet, if available, in the appendices.

Financing Plan

A financing plan demonstrates how the utility is prepared to fund its energy storage goals. Financing may be presented later as part of the more detailed business plan; however, if the utility is able to include this section in the initial business case, then it will demonstrate project feasibility to decision makers.

This plan should explain the source(s) of funding, costs of these funds, and backup options.

Some common funding sources that a utility may be using or considering that the utility would want to explain here include:

- Energy storage service agreements, power purchase agreements (PPAs), or other similar types of agreements
- Tax credits
- Federal grants (For utilities looking to identify funding opportunities, APPA's roundup of Federal Funding Opportunities for Public Power is a valuable resource.)
- State funding support
- Federal earmarks
- APPA's Demonstration of Energy & Efficiency Developments (DEED) program
- Other nonprofit funding
- Bond issuance or loans

When evaluating funding options, a utility should first determine:

Budget

- What amount of cost share can the utility afford, and what is the required cost share for various funding opportunities?
- What items is the utility looking to fund (e.g., construction, technology, software, training, other project needs)?
- Does the utility have internal staff or resources to hire a consultant to prepare funding applications and agreements?

Eligibility

- Will the utility be using technology and/or methods that are eligible for specific funding opportunities?

- Will the utility be partnering with a vendor, state agency, or coalition of other public power utilities? (Different funding opportunities require different partners. For example, the Grid Resilience and Innovation Partnerships (GRIP) program requires a utility to partner with a vendor or state agency in one out of three topic areas.)
- What amount of savings and/or benefits will the project bring per household or to disadvantaged communities?

Capabilities

- Does the utility have capability to install and maintain an energy storage system, or is it preferable for a third party to own, install, and maintain the system?

Timeline

- How quickly will it be necessary to secure funding to either meet business goals or comply with regulations?

Flexibility

- Will the project be able to meet certain terms and conditions required by different funding sources?

Local Regulation

- What type of ownership arrangements are permitted by the utility's state or jurisdiction?

Even if a detailed financial plan has not been developed, this section should indicate the energy storage solution business model to be adopted (e.g., whether the asset will be owned or have its power purchased under a PPA).

Depending on the amount of detail the utility can provide, this section may be one to two pages. Detailed financial documents or loan approvals can be included in the appendices.

Risk Analysis

In this section, the risks associated with the project and ongoing operations are transparently explained along with the relevant details that demonstrate that the risks have been fully assessed and why they should not preclude moving forward.

Utilities will likely have done this analysis prior to developing a business case as part of selecting an energy storage solution. For more information on how to identify and assess risks, develop tailored risk management strategies, and effectively communicate risk information to leadership and stakeholders, consult APPA's Risk Management Toolkit for Public Power Utilities.

The risks will be based on the system the utility selects, as well as its own existing infrastructure and business model. Below are categories that should be considered:

Reliability

- Equipment maintenance
- Mechanical failure

Safety

- Fire
- Hazardous materials

Regulatory

- Federal Energy Regulatory Commission regulations
- Permitting
- State regulations
- Local regulations

Legal

- Land use and zoning laws
- Litigation
    - Vendor disputes
    - Safety complaints
    - Public lawsuits

Contractual Obligations

- Power supply arrangements (e.g., Tennessee Valley Authority, Bonneville Power Administration, Western Area Power Administration, Southeastern Power Administration, Southwestern Power Administration, and joint action agency)
- Regional transmission organization/independent system operator requirements

Community Acceptance

- Perceptions regarding safety and fire risks
- Engaging and educating fire departments and first responders

Implementation

- Supply chain limitations
- Common communication protocols

While costs are already addressed, if there are specific risks associated with project or operational finances, a utility can also include cost as a separate category.

One recommended approach to presenting risks is a table, such as the example in Table 3. A table should take up no more than one page.

Table 3. Simple Risk Register

Risk	Description	Probability	Impact	Mitigation Strategy	Contingency Plan	Ownership
Name of specific risk. For example, if there are multiple safety risks, list them separately.	Brief description of the risk (1-3 sentences).	Probability of the risk occurring on a standard scale (e.g., Low-High, 1-10).	Measure of how damaging the effects will be if the risk occurs on a standard scale (e.g., Low-High, 1-10).	Plans for preventing the risk from occurring.	Plan for what will be done if the risk does occur.	Person/ team responsible for the risk.

Additional Considerations for Implementation

This section identifies any aspects, in addition to the purchase or installation of the system itself, that will need to be addressed to move forward with the proposed solution and includes plans for addressing those needs.

These requirements will likely have been considered in the process of selecting an energy storage solution, and a utility may reference its research from that process, meeting notes, and internal communications to ensure this list is comprehensive. These will depend on the individual situation but may include the items listed below. Some questions a utility should consider in completing this section are listed following each item.

Training/Hiring Staff

- What number and percentage of existing staff will need to be upskilled?
  - How will staff be trained?
  - How long will it take to fully prepare the existing staff to operate the selected energy storage solution?
  - What additional staff will need to be hired?

Permitting

- What types of permits will be required?
- Who are the authorities that issue these permits?
- What is the timeline to secure the necessary permits?
- What aspects of the energy storage project can or cannot begin prior to securing permits?

Infrastructure Upgrades

- Which specific elements of the infrastructure will need to be upgraded?
- Why are the upgrades necessary?

For example:

- Special protection systems may need to be in place to support the unique operations of energy storage systems.
- Special system upgrades may be needed to accommodate bulk power system requirements and may differ for behind-the-meter versus utility-interconnected systems.
- Do upgrades need to be completed in advance of implementing the energy storage system?
- If/when will upgrades be necessary if an energy storage solution is not implemented?

Information Technology

- What additional software integration will be needed now or in the future?
- Does the energy storage system require additional communications infrastructure or improved data access (e.g., sensor data, pricing data, regional operation condition data) and systems?
- What measures will be implemented to ensure secure communication between energy storage system and the utility's network?
- What secure methods will enable remote monitoring and control?
- Consider a software roadmap to implement progressive benefits for the energy storage solution.
  - Will cloud access and new software offer opportunities to optimize energy storage dispatch, or the economics of asset operation?
  - Will the solution allow for real-time and predictive energy market analysis?

- Are supervisory control and data acquisition (SCADA) system integrations necessary and/or beneficial?
- Will the software support predictive operational control that accounts for bulk power system conditions and requirements?
- What tools or platforms could be used to aggregate data from multiple energy storage systems for unified management?

Power Purchase Agreement Obligations

- Could an energy storage system cause bulk power purchases to fall below agreed-upon minimum purchase thresholds?
- Could an energy storage system affect any terms regarding energy generation dispatch or control or violate any generation exclusivity terms?
- Would the system's intended peak demand management function inadvertently trigger contractual penalties if minimum thresholds for capacity charges are not met?
- How would energy storage affect any compensation schemes for curtailment?

Insurance

- What type(s) of insurance need to be purchased?
- Who are the issuers of this type of insurance?
- What types of documentation will have to be provided to secure insurance?

It is acceptable to list these as bullets followed by a short paragraph providing the relevant explanation or as a table. Table 4 provides a sample format.

The table should be no longer than one page, but depending on the number of items that need to be included, this section may be longer.

Table 4. Overview of Additional Considerations

Need	Description	Resolution	Cost	Timeline

Retirement Plan

A retirement plan sets forth how the utility will determine when the energy storage system needs to be decommissioned and a plan for doing so.

Establishing and being able to describe an end-of-life plan shows decision makers that a utility has considered the entire lifecycle of an energy storage project and is prepared to manage all eventualities.

In completing this section, a utility should give thought to:

- Total life expectancy of the system
- Preparations for failure
- Options for repowering
- Transfer of ownership at the end of life

Depending on the business model, a retirement plan may be developed by the vendor supplying or operating the energy storage system.

This section may be limited to no more than one page.

Project Governance

This section explains the project's organizational structure, including key personnel, their roles and responsibilities, and the decision-making hierarchy.

Not every utility will have made these determinations before submitting a business case, but including this information is evidence of a well-thought-out plan, and the qualifications of those who will be involved help persuade decision makers that an energy storage solution is a manageable project.

It may be effective to organize this list in rank order. Each entry could have a structure such as:

> ***Name,*** *Title*
> Short bio/summary of qualifications (three to five sentences). Description of responsibilities (one to two sentences).

Résumés for each individual should be attached in the appendices. For projects primarily managed by third parties, it may be logical to either include vendors as a subsection of project governance or eliminate this section and integrate project governance into the vendors section.

Vendors

The inclusion of vendor information depends on the utility's progress in business plan development. This may encompass a list of potential or selected vendors.

For utilities still in the vendor identification phase, APPA's Public Power Suppliers Guide is a valuable resource.

It is best to present a vendor list in columns or as a table. Table 5 shows a sample with the categories a utility may elect to include.

If many potential vendors are still under consideration, and this list is lengthy (i.e., greater than 10 items), it may be more effective to include this in the appendices.

In addition to the vendor list, it is important to consider supply chain risk management. A utility should assess potential supply chain disruptions and evaluate vendors' capacity to meet demand and deliver critical materials or services on time, which may involve evaluating vendor contingency plans. Maintenance provisions in vendor contracts should also be carefully addressed to ensure ongoing system reliability. It would be helpful to outline clear expectations for ongoing maintenance and support, including preventive maintenance, spare parts availability, and timely service response to minimize downtime.

Table 5. Vendor Comparison Chart

Vendor Name	Product/Service	Website	Contact (include name, title, email and/or phone)	Price	Timeline

Project Timeline

A timeline helps decision makers understand the sequence of steps necessary to complete the energy storage project.

To develop a timeline, a utility should consider all the major steps involved in the project, arrange them in sequential order, estimate the amount of time required for each step, and then define major milestones and the expected completion dates.

It is helpful to present milestones by quarter in a table or along a visual timeline, such as a flow chart or a Gantt chart.

Only major milestones need to be included in the business case, but a more detailed timeline can be included in the appendices. Likewise, a complete work breakdown structure and detailed project schedule are not necessary for the business case but will be important components of a project plan once the business case is approved.

Success Metrics

This section describes how the project's success will be evaluated and specifies when the utility will be able to measure those results. This helps decision makers clearly understand the results that the project expects to achieve.

Success metrics do not have to be financial. In many cases, an initial energy storage project may not yield immediate financial benefits. Instead, success metrics should relate to the need identified earlier in the business case.

A popular method for determining success metrics is to establish specific, measurable, achievable, relevant, and time-bound goals, also known as SMART goals. Below are examples:

Installing a battery storage system will allow [name of utility] to shave peak demand by [X]% within [X] months.

Installing a thermal energy storage system will reduce outages during summer storms by [X]% in [region] in [year].

Installing a mechanical storage system will produce a [X]% return on investment within [X] years.

After establishing the goal, a utility should explain how and when it will assess determining whether it is meeting the goal. Questions to consider when completing this section include:

- Will the utility gather data on a daily, monthly, or annual basis?
- Is this part of data the utility regularly collects, or will a new data collection process specific to this project have to be developed?
- Will data be compared on a monthly or annual basis?
- Will the utility generate or publish reports of this data? How will reports be shared?

In cases where the success metric is qualitative, it is still necessary to establish a method for determining whether the project is accomplishing its goals. For example, if the goal is knowledge acquisition, a utility may plan to conduct internal research, such as employee interviews or surveys, and should indicate how and at what intervals that will be done.

This section should be no more than one page in length.

Next Steps

An effective business case includes a clear call to action so that decision makers know what is being asked of them and specifies what the utility plans to do following the report and/or action by decision makers.

Next steps may include gaining approval, securing funding, or acquiring physical assets. Additional steps to take may also be found in the “recommendations” portion of the results of an assessment taken via the Public Power Energy Storage Maturity Model.

This section may be approximately half a page.

Appendices

Detailed spreadsheets and additional supporting materials that help to support the overall business case can be included as appendices. Any documents included in the appendices should be referenced at least once in the main body of the business case.

MORE INFORMATION

For more information about this Public Power Energy Storage Business Case Guide or for assistance with developing a business case for energy storage, contact EnergyTransition@PublicPower.org.

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