

BLACK & VEATCH BUSINESS CASE CONSIDERATIONS FOR MICROGRIDS



Functional Definition of a Microgrid

A group of interconnected loads and distributed energy resources (DER) with clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid [and can] connect and disconnect from the grid to enable it to operate in both grid connected or island mode.”

Localized
generation
and load

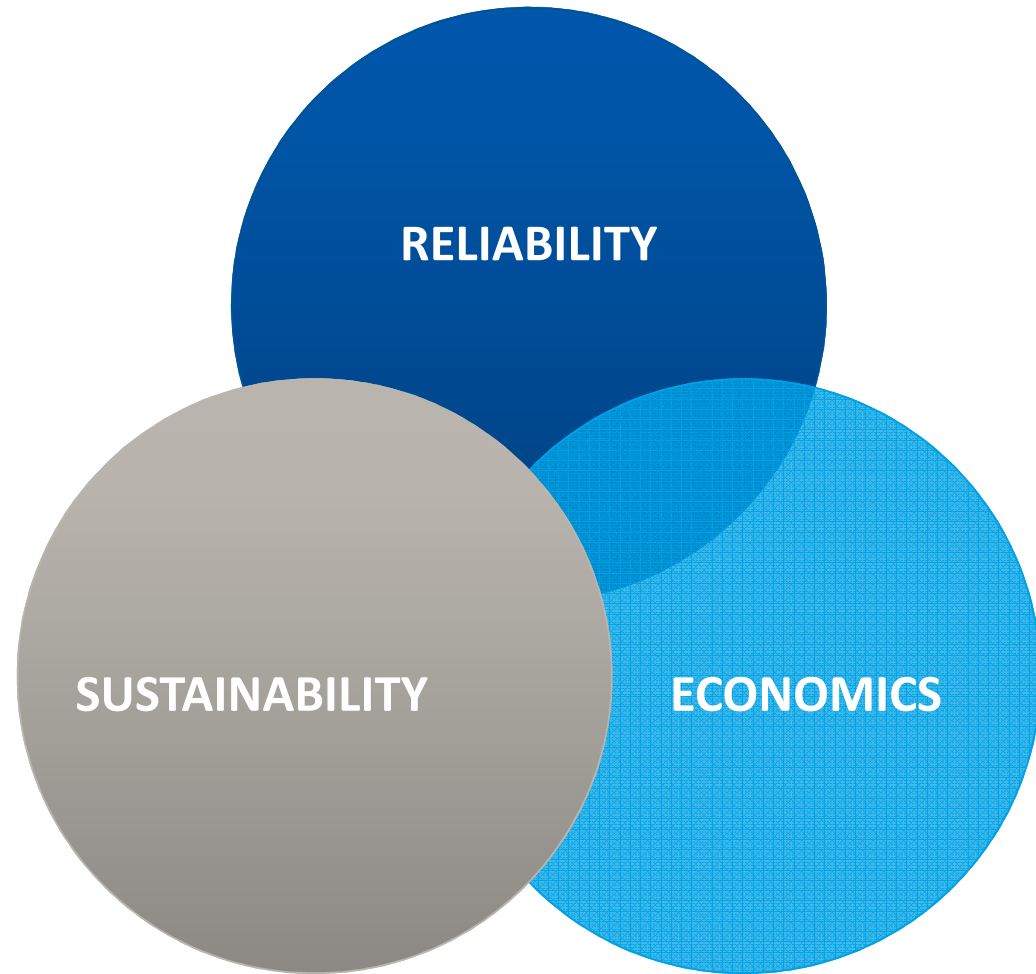
Island or grid-
connect mode

Smart controls



Microgrid Drivers

Why does anyone consider installing a Microgrid?



Business Cases for Microgrids:

1. DIY – Do It Yourself
2. DIFM – Do It For Me
3. DIT – Do It Together

Standard Business Cases:

DIY:
Customer
Owned

DIFM:
3rd Party
Owned

DIT:
Joint or P3
Owned

Self
Operated

3rd Party
Operations

Developer

Utility

Utility

Developer



Business Case for Doing it Yourself (DIY)

Maximize Savings,
Control, Environmental
Credit, & Risk

Reliability



Sustainability



Economics



MAXIMIZED



Business Case for Do it for Me (DIFM)

Achieve Savings,
Environmental
Benefits, & Minimize
Risk

Reliability



Sustainability



Economics



MAXIMIZED

RISK SHIFTED



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Business Case for Do it Together (DIT)

Sharing of all aspects
and benefits – shared
risk

Reliability



Sustainability



Economics



ALL SHARED BTWN STAKEHOLDERS

RISK SHARED



DIY Considerations

If you decide to install a Microgrid yourself, what are some important factors to consider?

Reliability

- How reliable must the system be?
- How much responsibility do I want to take?

Sustainability

- Is there a defined value for “Green”?
- Is there a corporate goal/target?
- Can you take tax credits/incentives?

Economics

- What is the required ROI?
- How much capital is available?
- What is the required payback?

Central Question: How much risk do you want to assume?



DIFM Considerations

If not DIY, why have
someone install a Microgrid
for you?

Risk in exchange for value

Reliability

- What is the guarantee?
- What is the impact of an interruption?
- Who is responsible?

Sustainability

- Who receives the “green credits”?
- Who receives tax credits/incentives?

Economics

- What are the savings?
- What other benefits can be quantified?

Central Question: What value is gained for risk avoided?



DIT Considerations

How would a partnership or joint venture be structured?

Balance of risk and value

Reliability

- What is the goal?
- Who is responsible?
- What is the impact of an interruption? Sustainability

Sustainability

- Who can benefit from tax credits/incentives?
- What level of environmental benefit is required?
 - Net zero, 100% renewable, etc.

Economics

- What are the savings?
- What other benefits can be quantified?
- How are the benefits shared?

Central Question: What do I do best?



Conclusion:

Start with the end in mind!

- **Microgrid Drivers become goals**
- **Define your goals**
 - Reliability – R3: Redundancy, Resiliency, & Reliability
 - Sustainability – Operations & Environment
 - Economics – Energy Savings, Capital Required, Etc.
- **Balance**
 - What do you want?
 - What is available?





BLACK & VEATCH

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