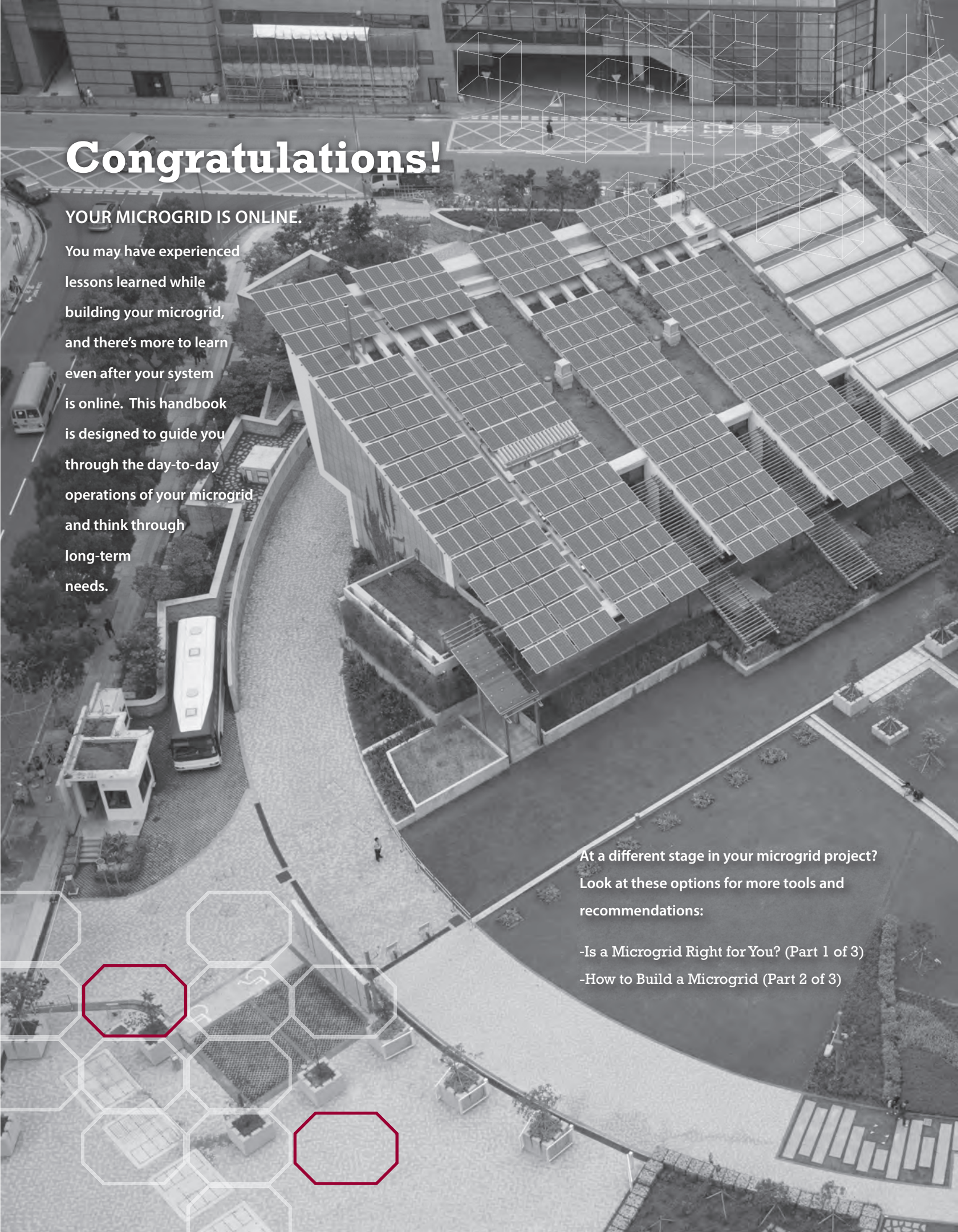
The Short- and Long-Term Care of Your Microgrid

Part 3 of 3



Congratulations!

YOUR MICROGRID IS ONLINE.

You may have experienced lessons learned while building your microgrid, and there's more to learn even after your system is online. This handbook is designed to guide you through the day-to-day operations of your microgrid and think through long-term needs.

At a different stage in your microgrid project? Look at these options for more tools and recommendations:

-Is a Microgrid Right for You? (Part 1 of 3)
-How to Build a Microgrid (Part 2 of 3)

Contents

Who's in charge of operations and maintenance?

If you haven't identified who's responsible for troubleshooting issues, then you're likely the one doing it.

This might be all right if you have enough knowledgeable staff to monitor a microgrid's intricacies. But if you question your team's ability to handle the workload or a complex system, consider outsourcing the task to ensure you have resources dedicated to your microgrid. Here are your three options:

As a utility, you already have hundreds of thousands of assets with points you're trying to monitor. Do you want to monitor the microgrid as well?

DO-IT-YOURSELF

You manage the day-to-day operations and fix problems if they arise.

PROS:
Often less expensive, and you're onsite if something were to go wrong

CONS:
Complexity usually requires training and staff dedicated to the microgrid

QUESTIONS TO CONSIDER:

- How do I need to train my staff—both when the project comes online and then continually to carry over knowledge during staff turnover?
- Do I need more staff to dedicate to monitoring the microgrid?

O&M CONTRACTOR

Some companies specialize in monitoring systems.

PROS:
Cost-competitive and frees up your time

CONS:
Still a learning curve for a third party to understand your particular microgrid, or their sense of urgency may not be the same as yours

QUESTIONS TO CONSIDER:

- Are you prepared to onboard a third party and explain how your microgrid is set up?
- Are you sure contractors are knowledgeable in microgrid complexity, or will this system be over their heads?

YOUR INTEGRATOR

The people who engineered and built your microgrid will also run it.

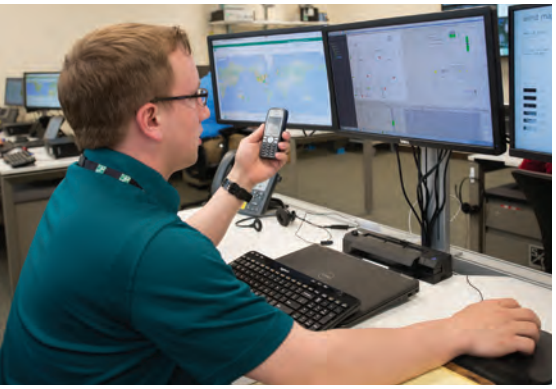
PROS:
They built your microgrid, so they know it best, and their trained staff will be quickest to resolve any issues

CONS:
There's only one option—the people who built your system

QUESTIONS TO CONSIDER:

- Who do you want on the other end of the line when you need help?
- Did your EPC scope involve post-installation operations and maintenance?

Check whether your microgrid integrator has a simulation of your system. This will make it easier for training so you don't have to interrupt your actual microgrid.



The Realities of Running Your Microgrid

Although microgrids are designed to act automatically and independently, this doesn't eliminate the need for operations and maintenance. Just as you needed to think through the complexity of creating your microgrid, think through how these complexities carry over to running your microgrid once it's online. What would you do in these scenarios?

Scenario 1:

You know a device has failed somewhere in your microgrid, which contains equipment from multiple manufacturers. Who made the device that failed? Is that manufacturer responsible for fixing the equipment and ensuring it's still compatible with microgrid operations? Do you have someone on your staff, or go-to, on-call support, that's familiar with the products in your microgrid, even though they're made by various companies? Even if your support is familiar with the equipment, are they only familiar with the equipment in its typical grid-scale application, or does your support know how differently it functions within a microgrid environment?

This scenario demonstrates the importance of defining in advance how your microgrid will be maintained and, if needed, designating the appropriate point people for particular tasks. Especially when issues arise, you don't want to waste time determining who should and can fix a problem.

Scenario 2:

A fault occurs within your microgrid, and the system successfully isolates it. Your microgrid remains online, so you are unaware of the fault. Later, another fault occurs at a different location within your microgrid, and paired with the isolated fault, the entire microgrid goes down. Now you need to figure out what went wrong and how to fix it.

This potentially troublesome and time-consuming scenario can be avoided with real-time monitoring, which allows you to see how your system is operating at any moment. If you had visibility to the first fault, you could have corrected the problem and gotten out in front of any subsequent faults that would have taken down the system.

Maintenance: Common Pitfalls and Mistakes

1. **Not monitoring your system.**

Even if your microgrid was built perfectly, it can stop working if it's not regularly inspected. Simple things such as batteries in devices must be checked annually because failing to do so can lead to system failure.

2. **Not designating who's responsible.**

Whether you're handling maintenance internally or relying on someone else, know who's appointed for each task so maintenance doesn't slip through the cracks.

3. **Ignoring minor hiccups.**

Even though you have redundancy built into your microgrid, small issues can turn into big problems fast within such intricate systems.

4. **Not customizing maintenance schedules.**

Factor into your maintenance plan that you have many types of components from various suppliers that have individualized requirements. This includes software updates and bug fixes, especially to accommodate continually evolving security requirements.

5. **Neglecting backup inventory.**

Some equipment is too large or costly to have excess, but keep what spare parts you can on hand to make replacing them easy.

6. **Forgetting to train new staff.**

Staff retirement and turnover is natural, but be sure you create comprehensive training and plan for onboarding so the knowledge of your microgrid's needs don't leave with your personnel.

Planning for Expansion

It's always easier to expand your microgrid when you've considered growth from the beginning. That said, you can still move forward with your plans as long as you can get past these three main deal breakers:

Deal Breakers	No Go	Go
Space	You physically can't fit any more equipment into your microgrid's boundaries—or it would be cost prohibitive to do so.	You have adequate space and have either (a) planned for expansion already or (b) can easily utilize existing infrastructure.
Ratings	Adding more load will cause your equipment to exceed their ratings.	Your equipment can handle additional load.
Controls	Based on where you're adding or expanding equipment, you'll need to recode your sequence of operations because you're essentially designing a new microgrid.	You're expanding or adding new equipment close to the existing ones, so chances are you only need to tweak control parameters.

Want Help Mastering Your Microgrid?

Connect with us at
sandc.com/microgrids

At a Different Stage in Your Microgrid Project?

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