



NOR-CAL CONTROLS
ENERGY SOLUTIONS

4 WAYS TO **SAVE MONEY** ON YOUR **DAS**

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**YOUR PROJECT.
OUR PASSION.**

A photograph of construction workers on a red-tiled roof. In the foreground, three workers wearing hard hats and safety vests are visible. One worker is carrying a solar panel. In the background, two more workers are visible. The roof is covered with solar panels and associated wiring.

You can save money on your DAS by considering these **four** ways:

1. MET STATIONS
2. CABLING
3. DATALOGGING EQUIPMENT
4. FIELD ENCLOSURES

This white paper covers the four **simplest ways** to save money on your DAS, plus what options may be **worth the spend** when necessary.

INTRODUCTION

Data Acquisition Systems (DAS) are an essential component for commercial and industrial (C&I) or distributed generation (DG) solar PV installations and accounted for 18% of all solar PV net capacity generated in the United States in 2020¹. These projects are typically built on a smaller scale of capacity compared to utility-sized projects, generating on average 0MW-2MW versus 2MW-500MW, respectively. Due to their smaller nature, C&I or DG solar PV installations are very cost-conscious as their generation capacity is not enough to generate revenue and is typically used to off-set individual building or community grid power usage. Due to this, DAS projects are often bid with a preference towards lower overall cost and is an essential deciding factor. This white paper explores four ways to save money on your DAS project: meteorological (MET) stations, cabling, datalogging equipment, and field enclosures.

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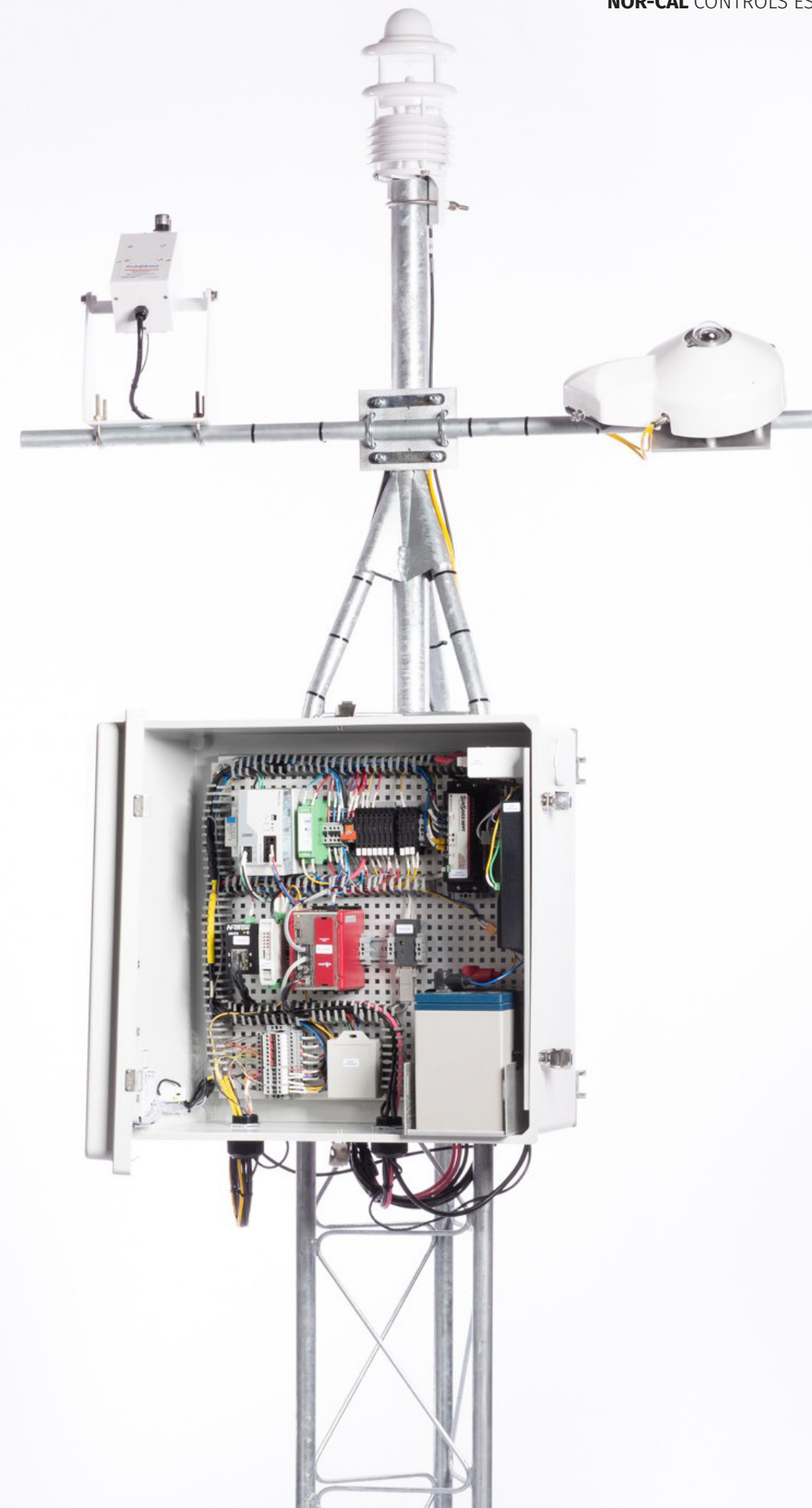
METEOROLOGICAL STATIONS

MET station considerations to save on your DAS

First and foremost, the simplest and most effective way to save money on a DAS project is to order and implement necessary equipment only. This includes MET stations, which are an integral part of solar PV DAS. There are numerous iterations of sensors that can be built into MET equipment, from global horizontal or plane of array irradiance to barometric pressure and wind speed. Each of these sensors can drastically impact the cost of a MET station, so it is vital to know which sensors are make or break for your site.

The best way to understand which sensors are right for your project is to plan out what data

your site will need to collect. Oftentimes power purchaser agreements (PPAs) or asset owners will have expectations for this data, so those are great resources to help make this decision. Once the essential sensors are determined, you can purchase a MET station that meets those requirements and avoid overspending on unused additions.





CABLING



...If you are looking to **save on expenses**, it is important to decide if your system will truly **necessitate** the extra spend for fiber over ethernet.”

As mentioned previously, DAS projects are smaller than utility-scale solar PV installations, so the number of panel arrays used tends to be smaller and they are often closer together as well. This allows for a few cost saving options when it comes to cabling. There are 3 potential types of cables used within a DAS installation: fiber, ethernet, and serial.

Fiber is the most expensive option and is required if your cables need to extend further than 300ft in any direction. Keep in mind that fiber will require purchasing both the fiber bundles and the interfacing equipment. For most DAS installations requiring less than 300ft of cable distance, the next cheapest option is ethernet. Copper ethernet is a great, cost-effective choice for cabling and like fiber will also require the purchase of the equipment necessary to pick up the data transmissions.

Lastly, serial is the cheapest of the three options but has the biggest distance limitation and typically also requires additional hardware and/or software to support protocol conversion back to TCP. Fiber has the greatest functionality in terms of communication capabilities but again, if you are looking to save on expenses, it is important to decide if your system will truly necessitate the extra spend for fiber over ethernet.

DATALOGGING EQUIPMENT

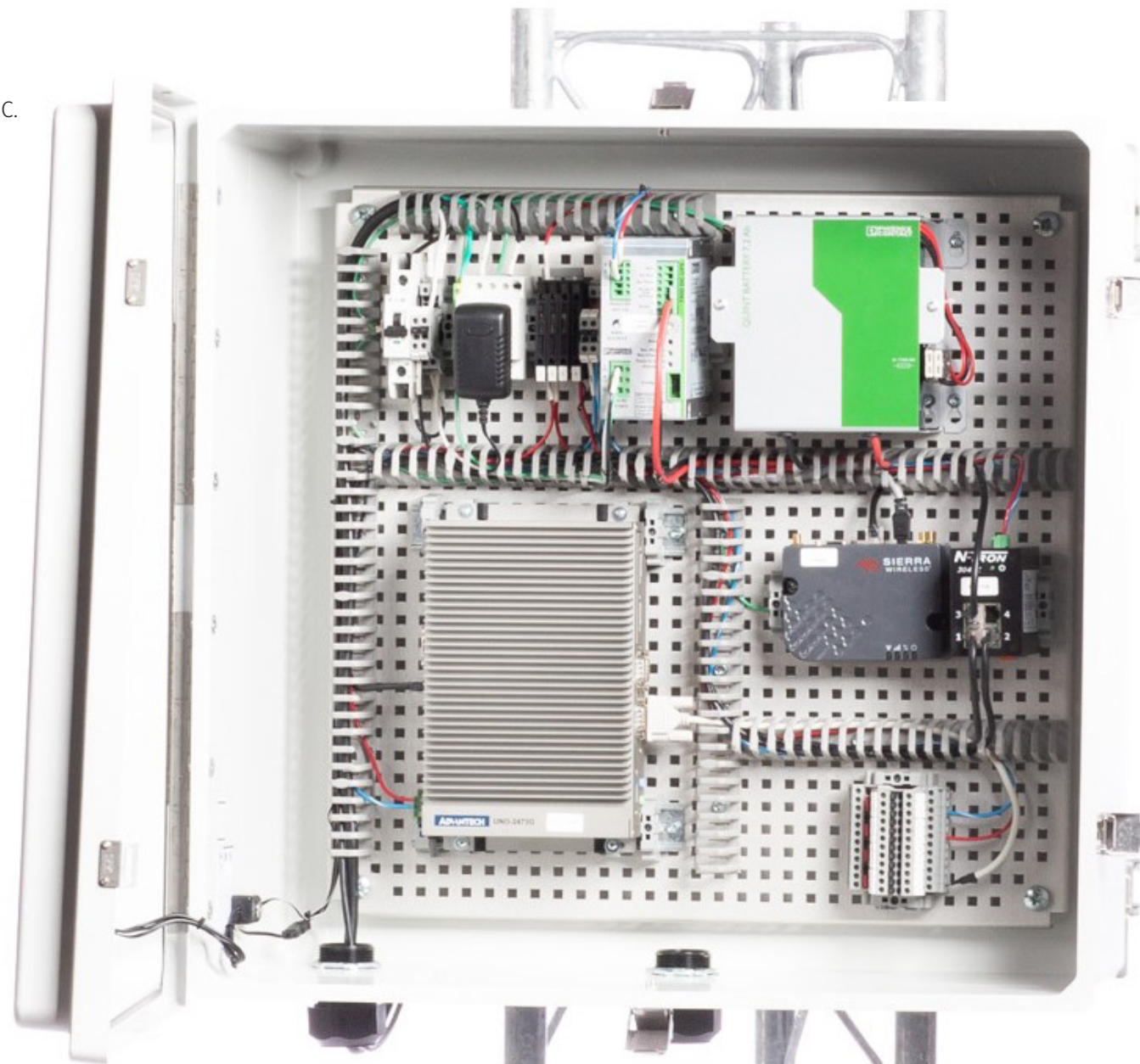
Much like cabling, choosing which datalogging equipment your DAS should use will come down to deciding what is the minimum your site will need to function properly.

There are basic, off the shelf options like Obvius or Red Lion that are compatible with most cloud-based data acquisition software monitoring platforms, such as Nor-Cal's preferred application, Power Factor's Drive.

If your site requires OEM software for its inverters or POI meters and relays, then a full PC option may be the best

way to go. This option functions like a small computer because it essentially is one, so it has greater versatility to its functionality. PC dataloggers can be more expensive however, so for most DAS sites an Obvius or Red Lion datalogger are sufficient and the best price option as well.





FIELD ENCLOSURES



Minimizing and optimizing the number of field enclosures installed throughout the site will **drastically impact** your bottom line.”

Reducing the number of field enclosures as a cost-saving option might seem obvious but it can be easily overlooked. Minimizing and optimizing the number of field enclosures installed throughout the site will drastically impact your bottom line. The best way to do this is to design the arrays with the number of field enclosures needed in mind. Be sure to place the field enclosure somewhere that it can reach all of the field equipment at once. Fewer field enclosures mean fewer individual pieces of equipment that need to go inside of it, so it is clear as to why this is a simple and effective way to lower your overall DAS budget.

END NOTES

ⁱ IEA (2020), Renewables 2020, IEA, Paris <https://www.iea.org/reports/renewables-2020>



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