

A Banker's Perspective on IECRE

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NREL PV Reliability Workshop
February 2015

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How the new IECRE conformity system should work?

- **Timing** is everything. As much should happen well in advance of construction, ideally at the design and procurement stage.
- **Ease of use** is key. How can we empower both checkers and those being checked to use this quickly and easily?
- **A checklist is good.** Make it a free **online tool – a wizard.**
- **Market it brazenly** to everyone.
- **Distinguish** it from NEC and separate standards. The whole is greater than the sum of its parts.
- Position it as a **competitive advantage** and encourage it as a requirement.
- And... somehow allow for a **contingency plan:** Don't want to encourage it, but what can people do when they fail? Adjust production estimate and reduce project price, perhaps?

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What problems it will address?

- **Safety** and **performance** issues, particularly **long-term**.
- A material amount of time and money spent arguing about **what to do**.

How would my organization be involved?

We would include it as a **Conditions Precedent** (CP) to funding and put it in advisors' scopes of work:

- factory inspectors
- test lab
- independent engineers
- attorneys (to ensure conformation to “documents”).

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A few more reactions:

- The key financial metric for banks is the **Debt Service Coverage Ratio**:
 - Revenue-Expenses (aka EBITDA)/Debt Payments (lease, loans, etc).
- **Air planes** are a good analogy for solar power projects -- they're complicated, run continuously and leased. Don't know if there's an equivalent standard to IECRE for planes.
- **Probably people's initial reactions**:
 - We're doing fine with the NEC (and implicitly NESC).
 - IEC is European and thus too stringent. It's true most power plants work as advertised.
- Position it as **NEC, plus IEC for solar?** *The sum is > the parts.*
- Do a **market research survey** to get people's perspectives.

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Possible areas for addition or more detail?

- Civil Engineering
- Geotech
- PAN file creation/verification
- MCP for met data
- Wire Management (possibly the most common installation issue)
- Location-specific tests: modules *and inverters*
- Module factory tests (during assembly)
 - Soldering (possibly the most common issue)
- Location-specific O&M scope of work
- CAISO SCADA Requirements (to anticipate nationwide adoption)
- Percentage of arrays inspected periodically
- Specific long-term energy test (performance ratio is probably easiest)
- Degradation test? (ala Dirk Jordan)

Arcing in L Conduit Fittings: A safety issue the industry should know about.



The Scenario: LB fittings run DC outside a building. Probably built circa 2007-9. Failed megger test last year.



Inside: Insulation shavings left from abrasion caused by thermal expansion and contraction of conduit. Use of protective plastic cuff unknown.



The Fix: A box replaces LB fittings and new cables are installed. I consider this a partial fix because LB fittings are still present -- those runs probably passed the megger test...

Thank you!

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