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August 27, 2026

11:30 am – 12:30 pm | EDT, New York City
5:30 pm – 6:30 pm | CEST, Berlin

Grid-first site selection: Understanding grid capacity and hidden network upgrade costs

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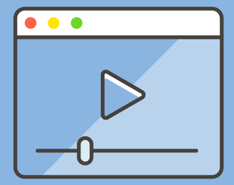
Welcome!

Do you have any questions

Send them via the Q&A tab. We aim to answer as many as we can today!
You can also let us know of any tech problems there.

We are recording this webinar today



We‘ll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience.

August 27, 2026

Understanding grid capacity

Why project developers need a grid-first site selection strategy

Hidden network upgrade costs

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About PVcase

PVcase is **moving solar forward** with an alternative to the traditional labor-intensive, time-consuming, error-prone solar project development process.

Our **site selection, PV design, and yield estimation software**, helps you achieve maximum results in a fraction of the time — to succeed faster, build better, and accelerate the global transition to clean energy.

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4 TW +
Project designed per quarter

1,900+
Customers

88+
Countries

20+
Employee locations

Trusted solar site-selection, design and yield software by 7,000+ solar experts

What we'll cover today

01 **Industry context**

Why the grid is the biggest bottleneck for energy infrastructure projects

02 **Understanding network upgrade costs**

How they're calculated, and why they differ for generators and data centers

03 **Grid-first site selection with PVcase**

How PVcase Prospect brings interconnection analysis into one workflow

04 **Demo: grid-first site selection in action**

A walkthrough from Reed

05 **Live Q&A**

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Industry context

Why capacity and upgrade costs have become the gating issue

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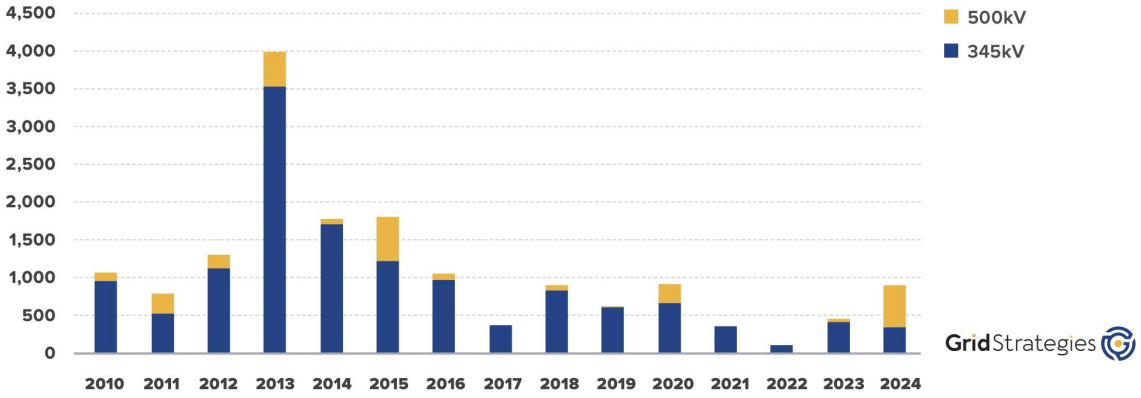
The grid is the biggest bottleneck for getting projects online

- **Aging infrastructure**, long lead times for high-voltage equipment, and lengthy permitting slow grid expansion
- **Electrification and AI-driven** load growth strain the same network
- **Land, permitting, and community still matter** — but grid viability often decides the outcome

UPDATED FIGURE 1 | Miles of new 345 kV+ transmission lines built over the last 15 years (updated using July 2025 data)[31]



Source: Data from FERC's Energy Infrastructure Update for April 2025

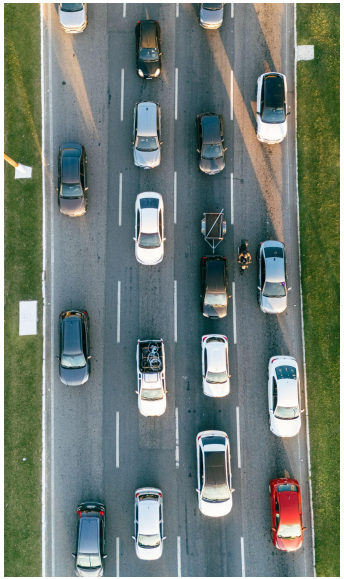
Result *Very few parts of the grid have available headroom capacity for new projects*

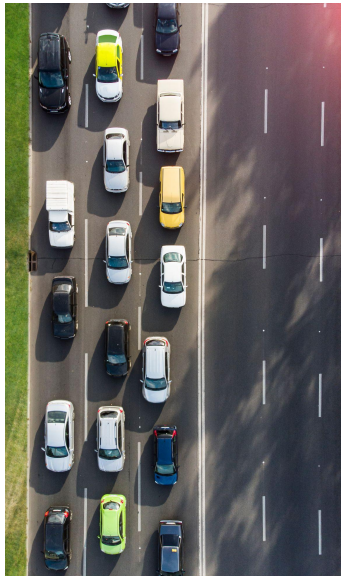
“Available capacity” isn’t a single number

It inherently relates to cost & time

Is there open capacity on the highway during rush hour?

As is:	Planned upgrades:	Custom build





Grid-first site selection is the only winning strategy

Traditional site-first approach

1. Start with land, grid proximity, or a random inbound site
2. Pay for a one-off POI study later in the process
3. Discover that upgrade costs or timing are unworkable
4. Absorb sunk cost, lost time, and queue risk

Grid-first approach

1. Screen POIs at scale for capacity, budget, and timing
2. Shortlist viable interconnection points first
3. Then proceed with land and broader site diligence
4. Reduce wasted studies and late-stage surprises

Start with the biggest blocker. If the POI has no path to power, the rest of the diligence becomes moot.

Understanding network upgrade costs

A technical concept explained in practical terms

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Transmission planning in a nutshell

1

Balance the system

The grid must stay in near balance between generation and load.

2

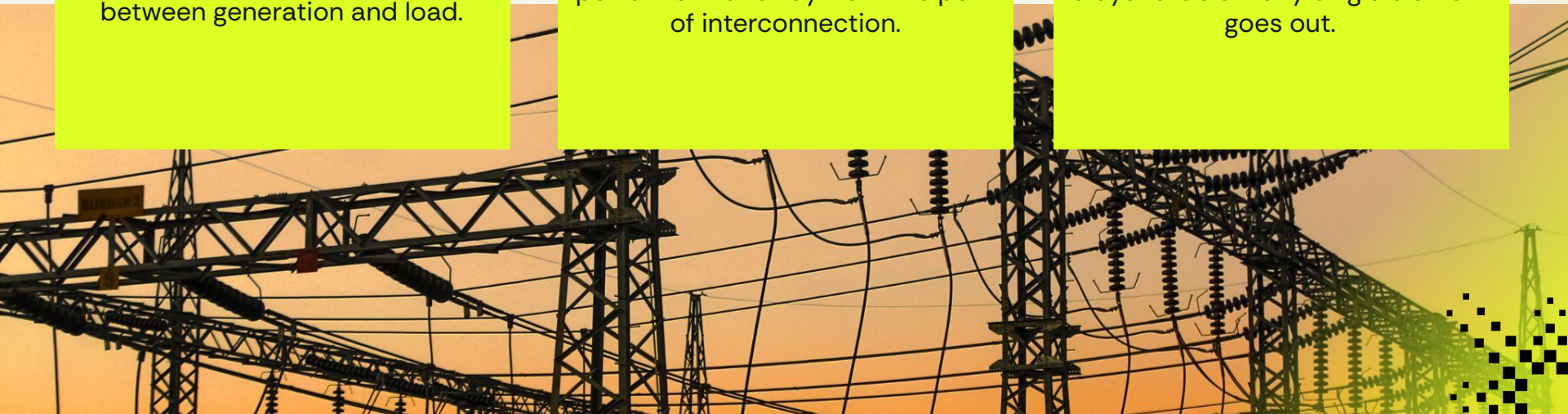
Study the whole network

A new generator/load can change power flow far away from the point of interconnection.

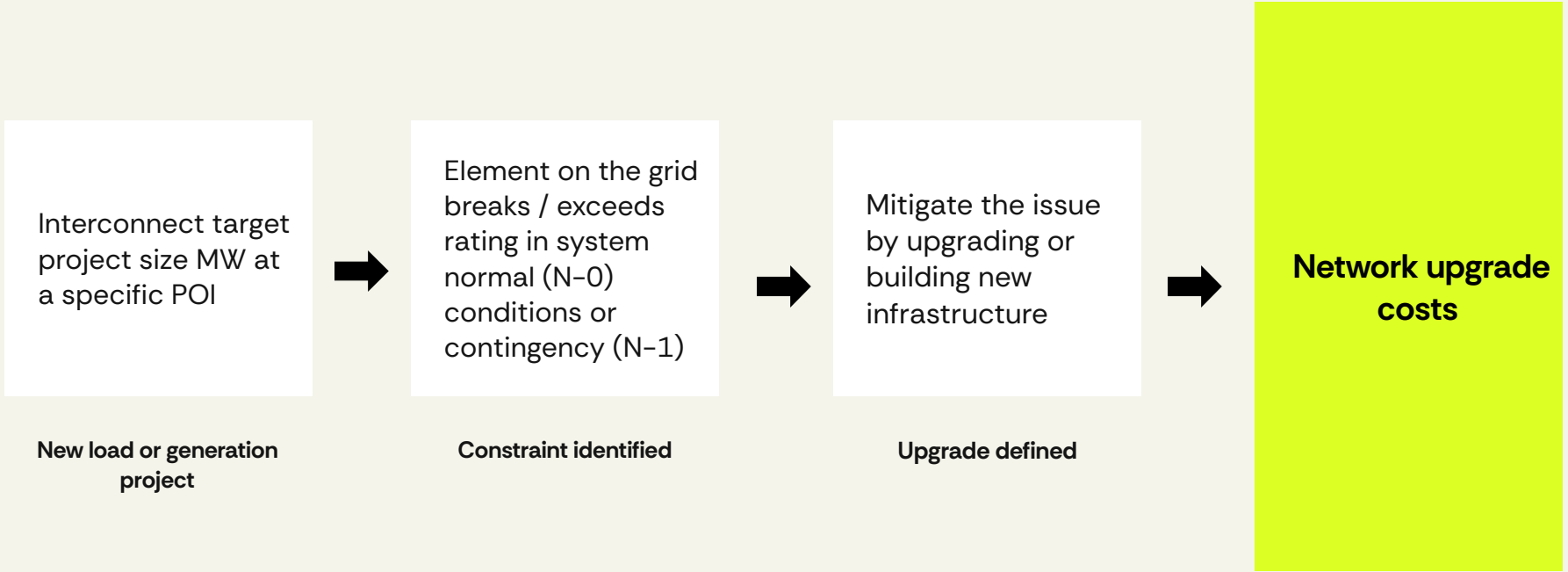
3

Test N-1 conditions

Operators test whether the grid stays reliable if any single element goes out.



Injecting or withdrawing power from the grid changes how electricity flows through the entire system



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Generators/storage developers pay proportionally allocated upgrade costs (standard ISO/RTO framework)

Allocated costs

- Proportionally assign upgrade costs among the generation/storage projects in the queue that contribute to a constraint.
- Costs proportional to each project's MW impact on the constraint that needs to be mitigated.
- If no other projects trigger the need for the same upgrade, then the project developer will be responsible for the full upgrade cost.

Data centers face a different — and less settled — cost picture

Traditional utility process

- Utilities absorbed network upgrade costs for new loads (mandate to serve new loads)
- Socialized network costs across all ratepayers by raising electricity prices

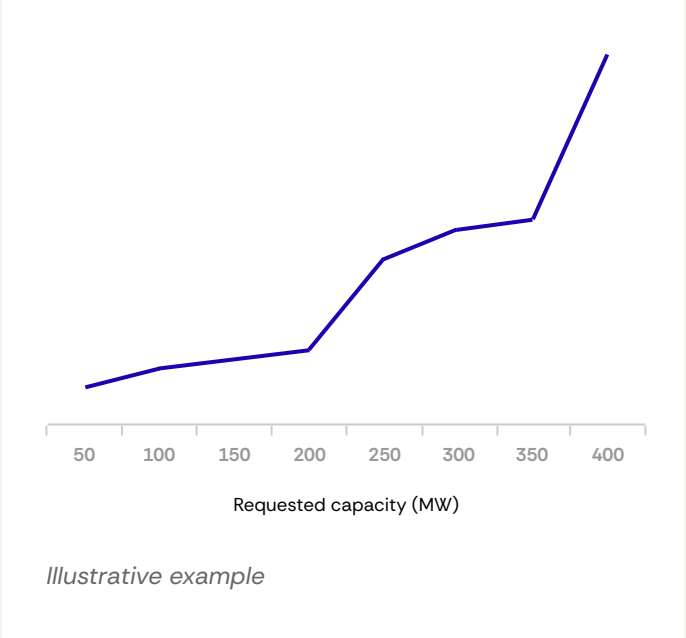
The shift underway

- AI-driven “large loads” are often 10x larger
- Grid operators are revising load interconnection policies so upgrade costs aren’t socialized across all ratepayers

There’s no standard cost-sharing framework/cluster study process yet for large loads — data center developers should plan for total, not allocated, upgrade costs to understand the worst case.

Network upgrade costs are non-linear

- A 1 MW increase in requested capacity can trigger millions of $s of additional utility upgrades
- Overstepping this small (invisible) line can drastically change financials & timelines



Illustrative example

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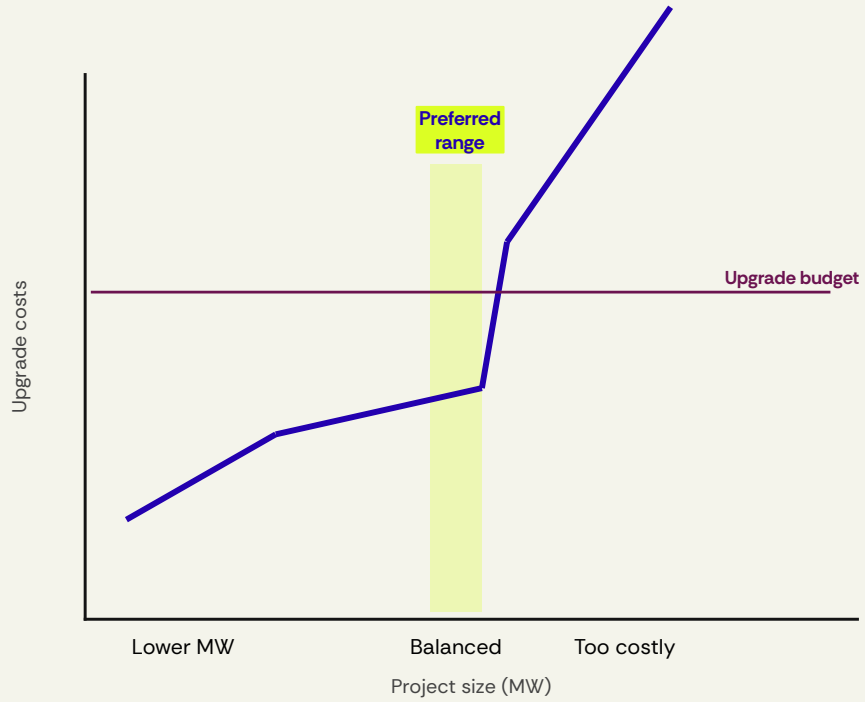
Understanding cost curves helps optimize project size

- Set a budget threshold for upgrades
- Test multiple project sizes (MW) at the same POI
- Find the best MW-to-cost ratio: develop projects just smaller than the next incremental upgrade
- Compare POIs on economics, not only headroom



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Accurate screening needs ISO-aligned, system-wide study logic

To estimate capacity and upgrade costs credibly before a queue application, the study logic needs to mirror how the grid operator evaluates projects.

System-wide

Evaluates how project affects power flow across the entire system

N-1 contingency

Tests against single-element failure

Latest base case

Uses the latest model of the grid from the ISO/RTO

Matching assumptions

References each unique grid operator's study methodology

Understanding cost curves helps optimize project size

Why this matters

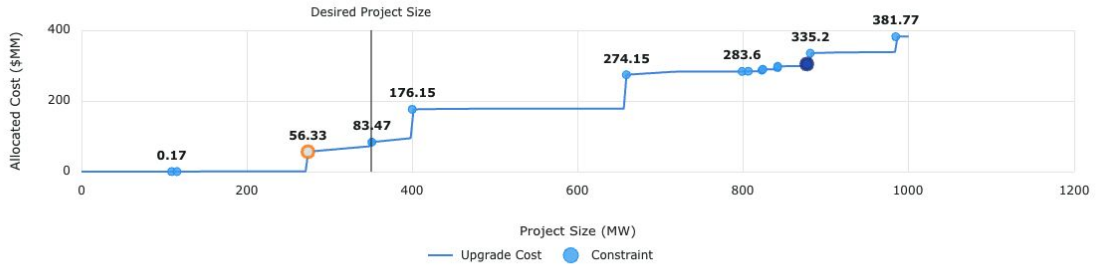
- Voltage and proximity do not tell the full story
- Similar apparent headroom can hide very different upgrades
- You need cost curves and breakpoint analysis to compare POIs properly

Point of Interconnection A

Rptap9 230.0 kV [ID:"RPTAP9"]

Project size
350 MW

Cumulative allocated cost:
$72.037 $MM
Cumulative total cost:
$92.850 $MM
Of Upgrades: **3**



There are no pre-existing issues at this point of interconnection under these simulation conditions.

Description	Triggered At (MW)	Total Upgrade Cost ($...	Dfax (%)	Allocated Upgrade Cos...	Direction
1. Axtell 345.0 kV TO AXTELL T1 345/115 kV ON circuit:1	109	7.31	7.011	0.534	Injection
2. AXTELL T1 115 kV TO Axtell 115.0 kV ON circuit:1	115.4	4.33	7.011	0.316	Injection
3. Rptap9 230.0 kV TO Great Bend 230.0 kV ON circuit:1	273.7	81.21	99.78	71.187	Injection
4. Spearville 230.0 kV TO SPEARVL 230 kV ON circuit:1	351.1	5.77	86.155	-	Injection
5. SPEARVL 230/345 kV TO Spearville 345.0 kV ON circuit:1	351.1	8.49	86.155	-	Injection
6. Rptap9 230.0 kV TO Spearville 230.0 kV ON circuit:1	399.8	81.21	99.945	-	Injection
7. Great Bend 230.0 kV TO South Hays 230.0 kV ON circuit:1	658.6	104.4	42.246	-	Injection
8. Pauline 345.0 kV TO PAULINE T1 345/115 kV ON circuit:1	798.4	7.31	3.356	-	Injection
9. PAULINE T1 115 kV TO Pauline 115.0 kV ON circuit:1	806	4.33	3.356	-	Injection
10. Heizer 230.0 kV TO HEIZER T1 230/115 kV ON circuit:1	822.6	4.87	15.703	-	Injection
11. HEIZER T1 115 kV TO Heizer 115.0 kV ON circuit:1	823.7	3.71	15.703	-	Injection
12. Spearville 230.0 kV TO SPEARVL6 230/115 kV ON circuit:1	841.3	5.03	24.937	-	Injection
13. SPEARVL6 115 kV TO Spearville 115.0 kV ON circuit:1	841.6	3.83	24.937	-	Injection
14. Great Bend 230.0 kV TO MULGREN6 230/115 kV ON circuit:1	876.3	4.92	15.685	-	Injection
15. MULGREN6 115 kV TO Great Bend 115.0 kV ON circuit:1	876.8	3.74	15.685	-	Injection
16. Spearville 115.0 kV TO North Judson Large 115.0 kV ON circuit:1	881	31.83	24.937	-	Injection

Generate Capacity Report

Close | Add POI to Project

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Lorem Ipsum

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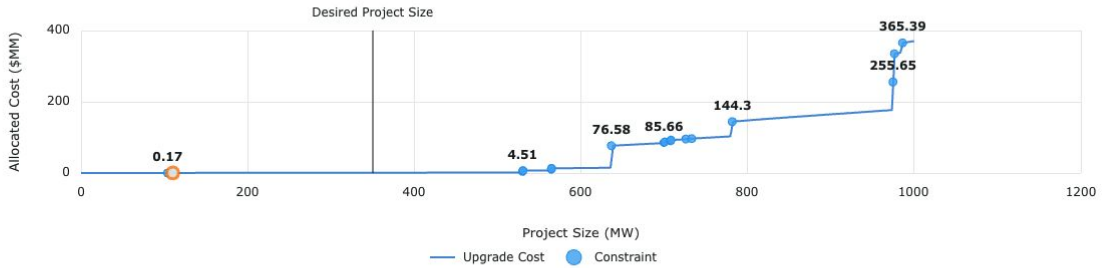
Point of Interconnection B

Great Bend 230.0 kV [ID:"GRTBEND6"]

Project size
350 MW

Cumulative allocated cost:
$0.891 $MM
Cumulative total cost:
$11.640 $MM
Of Upgrades: **2**



There are no pre-existing issues at this point of interconnection under these simulation conditions.

Description	Triggered At (MW)	Total Upgrade Cost ($...	Dfax (%)	Allocated Upgrade Cos...	Direction
1. Axtell 345.0 kV TO AXTELL T1 345/115 kV ON circuit:1	103.9	7.31	7.351	0.56	Injection
2. AXTELL T1 115 kV TO Axtell 115.0 kV ON circuit:1	110.1	4.33	7.351	0.332	Injection
3. Heizer 230.0 kV TO HEIZER T1 230/115 kV ON circuit:1	529.8	4.87	24.381	-	Injection
4. HEIZER T1 115 kV TO Heizer 115.0 kV ON circuit:1	530.6	3.71	24.381	-	Injection
5. Great Bend 230.0 kV TO MULGREN6 230/115 kV ON circuit:1	564.5	4.92	24.35	-	Injection
6. MULGREN6 115 kV TO Great Bend 115.0 kV ON circuit:1	564.8	3.74	24.35	-	Injection
7. Great Bend 230.0 kV TO South Hays 230.0 kV ON circuit:1	636.5	104.4	28.171	-	Injection
8. Heizer 115.0 kV TO HEIZER T2 115/69 kV ON circuit:2	699.7	3.01	3.158	-	Injection
9. HEIZER T2 69 kV TO Heizer 69.0 kV ON circuit:2	700.6	2.85	3.158	-	Injection
10. South Hays 230.0 kV TO S HAYS T1 230/115 kV ON circuit:1	707.4	4.68	12.523	-	Injection
11. S HAYS T1 115 kV TO South Hays 115.0 kV ON circuit:1	708.1	3.56	12.523	-	Injection
12. Pauline 345.0 kV TO PAULINE T1 345/115 kV ON circuit:1	726	7.31	3.691	-	Injection
13. PAULINE T1 115 kV TO Pauline 115.0 kV ON circuit:1	732.9	4.33	3.691	-	Injection
14. Great Bend 115.0 kV TO Ellsworth Tap 115.0 kV ON circuit:1	781.6	69.98	8.584	-	Injection
15. Great Bend 230.0 kV TO Rptap10 230.0 kV ON circuit:1	974.5	87.72	36.996	-	Injection
16. Rptap10 230.0 kV TO Circle 230.0 kV ON circuit:1	976.3	87.72	36.941	-	Injection

Generate Capacity Report

Close | Add POI to Project

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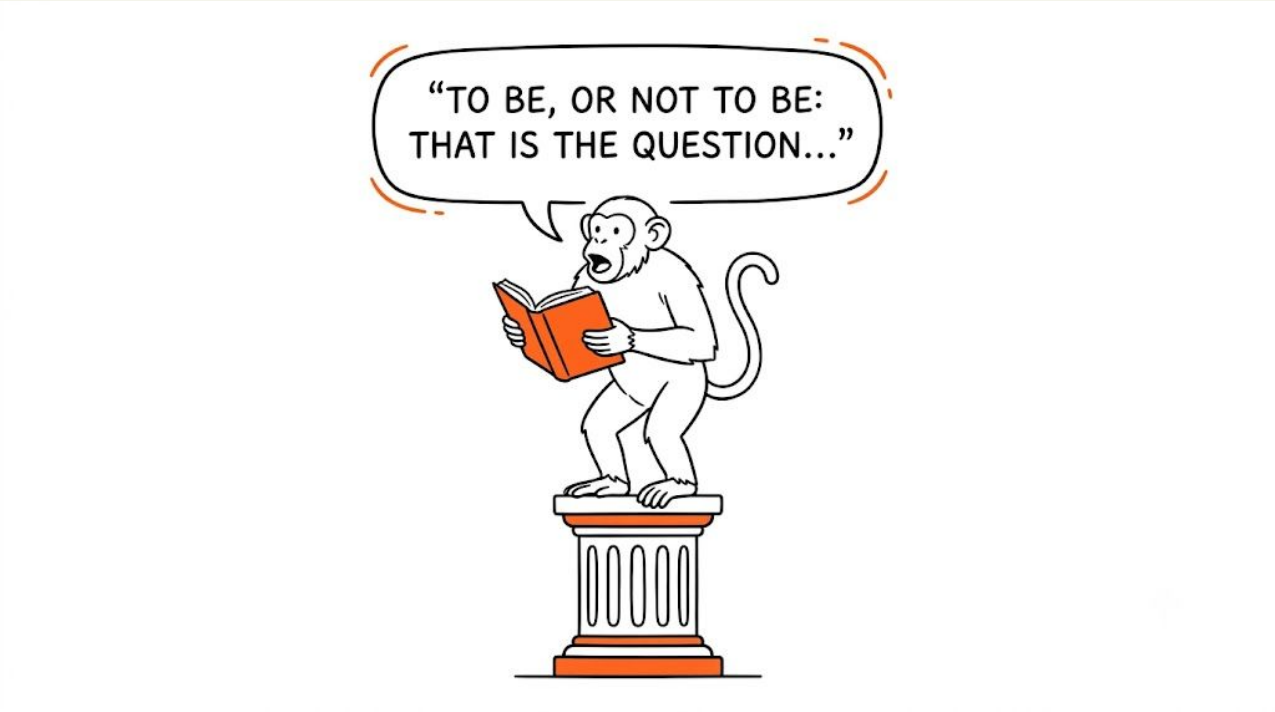
One-off power-flow studies are not the same as grid-first site selection

Traditional workflow	Grid-first workflow
Choose a likely site	Screen many POIs first
Pay for a one-off study	Filter by capacity and cost budget
Wait for results	Shortlist viable options
Find out the POI is not workable	Proceed with deeper diligence on stronger candidates

The shift is from paying for isolated answers to screening many options before committing resources.

Solve for the monkey first



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Grid-first site selection with PVcase

From interconnection screening to a stronger short list

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PVCASE PROSPECT

PVcase Prospect brings grid-first site selection into one workflow

Make go/no-go decision in minutes

Evaluate injection and offtake capacity, upgrade exposure, and potential interconnection risks.

Keep projects within upgrade budget

Identify points of interconnection with injection capacity based project size.

Right-size your project before triggering costs

Fine-tune your project size (MW) to avoid incremental grid upgrade costs.

See NRIS & ERIS studies across the U.S.

Evaluate firm and non-firm interconnection scenarios across U.S. ISO/RTO markets.

PVCASE PROSPECT

Instant, nationwide power flow studies – just like the grid operator

Injection and offtake capacity

Evaluates how project affects Filter thousands of POIs at once to find enough capacity within upgrade budget

Cost calculator

Optimize project size to avoid costly incremental upgrades

Upgrade breakdown

See pre-existing upgrades vs. what you're responsible for

Interconnection report

Export an engineering-level report for stakeholder review

Find points of interconnection with a path to power and then find developable sites nearby — all in one workflow.

Demo:

Grid-first site selection in action

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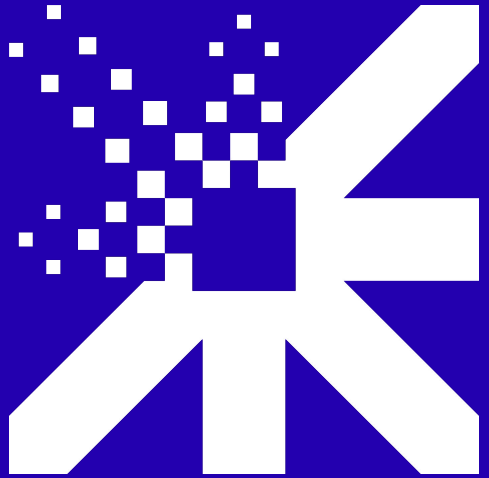
Let’s work together



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