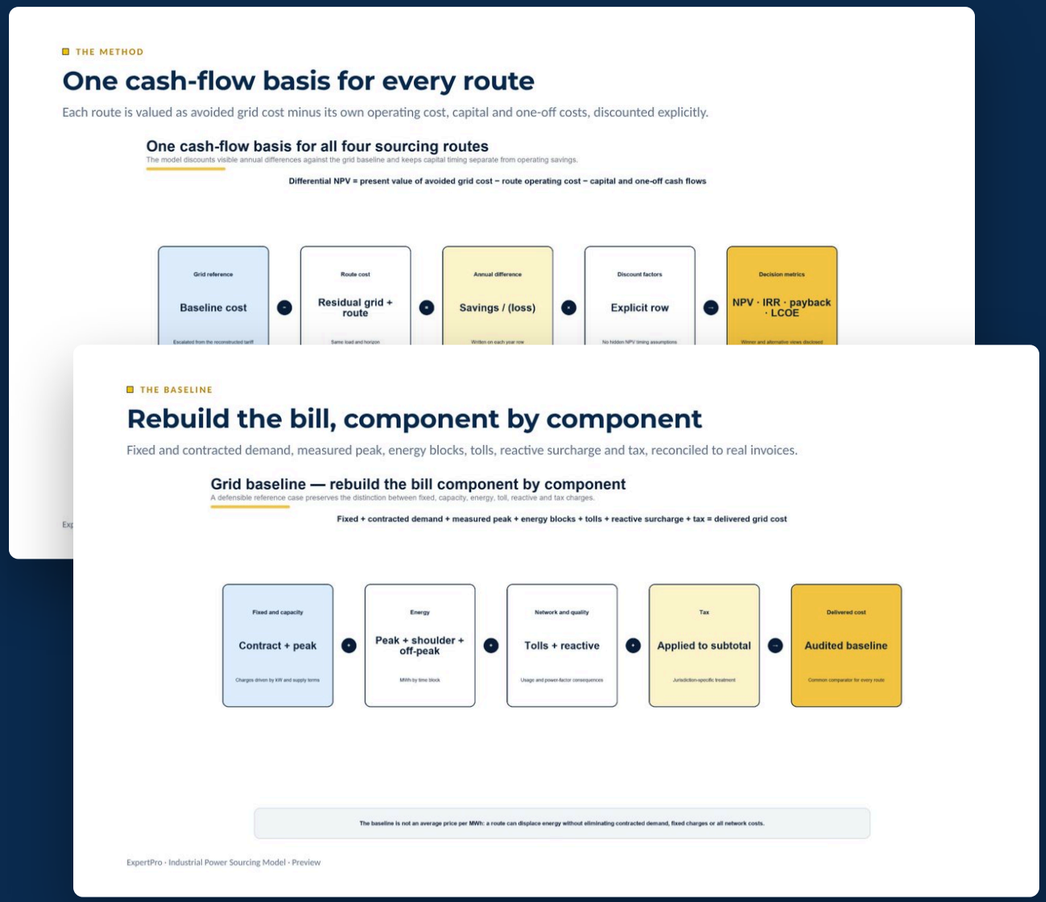
EXPERT PRO
EXPERTOS EN PROYECTOS

PRODUCT PREVIEW · GUIDED TOUR

Industrial Power Sourcing Model

Rebuild the electricity bill from the tariff, test it against twelve invoices, then compare grid, PPA, solar with storage and cogeneration.

4 routes | 12 invoices reconciled | 63 checks | No macros

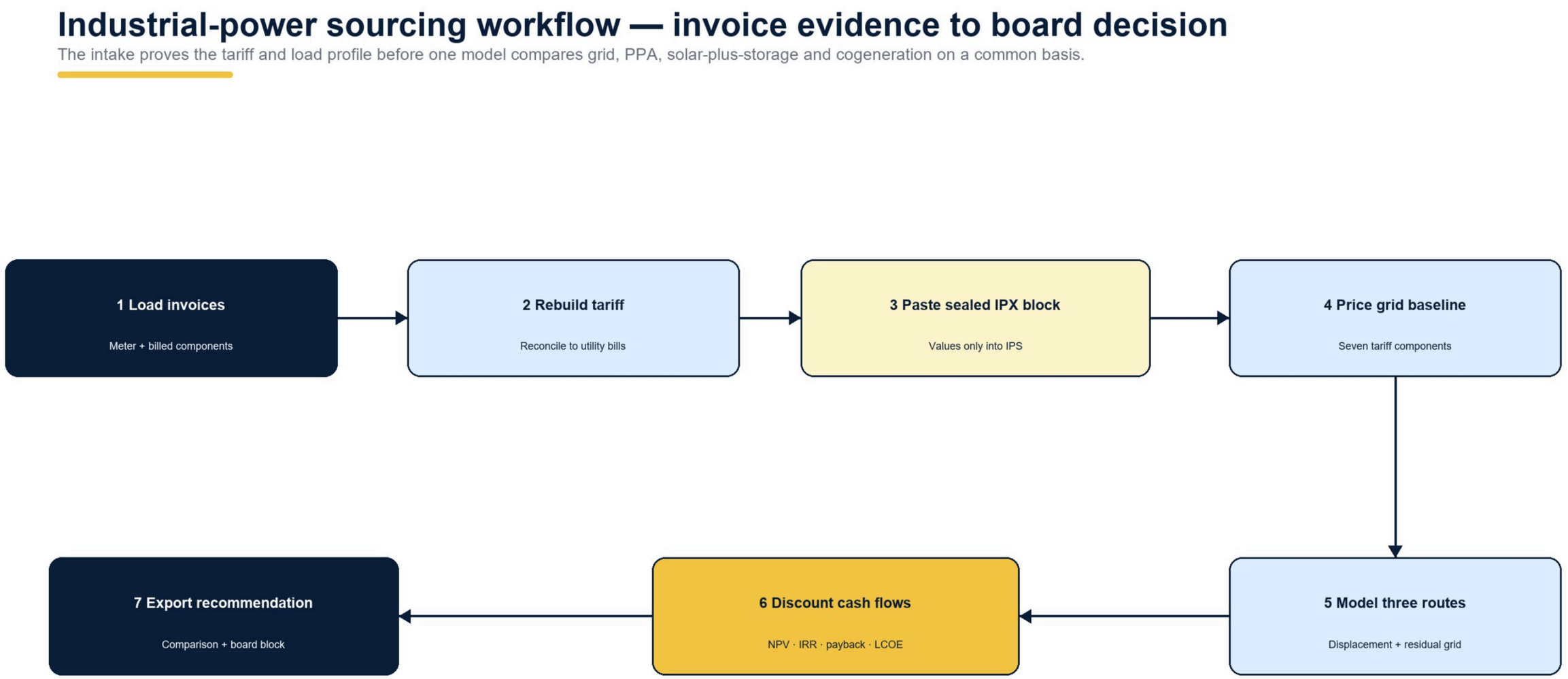


Illustrative demonstration data from the worked example. Not investment advice. 10 pages.

THE WORKFLOW

From invoice evidence to a board decision

The intake proves the tariff and the load profile before one model compares four sourcing routes on a common basis.



THE BASELINE

Rebuild the bill, component by component

Fixed and contracted demand, measured peak, energy blocks, tolls, reactive surcharge and tax, reconciled to real invoices.

Grid baseline — rebuild the bill component by component

A defensible reference case preserves the distinction between fixed, capacity, energy, toll, reactive and tax charges.

Fixed + contracted demand + measured peak + energy blocks + tolls + reactive surcharge + tax = delivered grid cost



The baseline is not an average price per MWh: a route can displace energy without eliminating contracted demand, fixed charges or all network costs.

THE METHOD

One cash-flow basis for every route

Each route is valued as avoided grid cost minus its own operating cost, capital and one-off costs, discounted explicitly.

One cash-flow basis for all four sourcing routes

The model discounts visible annual differences against the grid baseline and keeps capital timing separate from operating savings.

Differential NPV = present value of avoided grid cost − route operating cost − capital and one-off cash flows



The highest NPV and the lowest levelised cost can belong to different routes; both are valid answers to different questions.

THE OUTPUT

Four routes, compared on the same economics

Differential NPV, IRR, payback, capital required, levelised cost, first-year saving and CO2 avoided, side by side.

Power-sourcing routes — comparative economics

The four routes compared on NPV, return, payback, capital, cost, savings and emissions.

	GRID — DO NOTHING	OFF-SITE PPA	SOLAR + BESS	COGENERATION
Differential NPV over the horizon	0	1,647,868	862,681	35,860
Internal rate of return	0.0%	0.0%	16.9%	10.0%
Simple payback, years	0.00	0.00	5.52	7.44
Discounted payback, years	0.00	0.00	7.82	9.88
Capital required	0	0	1,972,000	1,305,000
Levelised cost delivered, $/MWh	131.78	88.56	86.17	113.06
Saving in year one	0	137,246	323,409	125,950
Share of consumption served	100.0%	75.0%	26.3%	47.9%
CO2e avoided in year one, tonnes	0	3,360	1,039	-784

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WORKED DEMO

What the food-plant demo shows

A refrigerated food plant using 14 million kWh a year on a regulated high-voltage tariff. Figures illustrate the method.

0.05%

Full-year reconciliation gap

Worst single month 1.12%

USD 1,647,868

PPA differential NPV

Over 10 years, with no capital

USD 86.2/MWh

Solar with storage LCOE

Against USD 131.8/MWh for the grid

USD 1,972,000

Solar with storage capital

5.5-year payback

USD 785,188

PPA advantage

Over solar with storage

USD 36,206

Right-sizing contracted power

A year, with no capital (PV USD 263,025)

NO-CAPEX FIRST

Right-size contracted power before investing

The model isolates the saving available from correcting the contract alone, ahead of any sourcing route.

Immediate no-decision action — right-size contracted power

The action that precedes every sourcing route, with full value labels.

	GRID — DO NOTHING
Reduce contracted power to the right-sized level	2,730
Kilowatts you are paying for and have never drawn	870
Saving in the first year	36,206
Present value over the horizon	263,025
Capital required	0
Reactive-energy surcharge a capacitor bank would remove	29,037

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CONTROLS

Named verifications on every block

Intake integrity and model mechanics, each with a live result, a severity and a status.

IPS verification checks 1–13

Intake integrity and core model mechanics, with live boolean results in English.

ID	Verification	Result (live)	Severity	Status
CHK-IPS-01	The intake block from the companion landed in the right rows: every label matches the expected field.	TRUE	ERROR	OK
CHK-IPS-02	The intake run that produced this tariff structure was itself clean.	TRUE	ERROR	OK
CHK-IPS-03	Month labels in the load matrix are unique.	TRUE	ERROR	OK
CHK-IPS-04	Route names in the decision table are unique.	TRUE	ERROR	OK
CHK-IPS-05	Every month carries a positive consumption and no negative block.	TRUE	ERROR	OK
CHK-IPS-06	Every monthly demand reading is positive and none exceeds the contracted power.	TRUE	ERROR	OK
CHK-IPS-07	Every measured power factor lies strictly between zero and one.	TRUE	ERROR	OK
CHK-IPS-08	No tariff rate, block price, toll or tax rate is negative.	TRUE	ERROR	OK
CHK-IPS-09	Every delivery and generation profile adds to one across the four blocks.	TRUE	ERROR	OK
CHK-IPS-10	Consumption carried forward equals the sum of the four blocks, every year.	TRUE	ERROR	OK
CHK-IPS-11	The baseline bill equals the sum of its seven components, every year.	TRUE	ERROR	OK
CHK-IPS-12	Each route's total cost equals its residual grid bill plus its own cost.	TRUE	ERROR	OK
CHK-IPS-13	The differential cash flow equals the baseline cost less the route cost, year by year.	TRUE	ERROR	OK

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WHAT YOU RECEIVE

What is in the download

Format: Excel (XLSX) + ZIP.

XLSX	The 16-sheet sourcing and investment decision model
XLSX	The 13-sheet load-profile, invoice and tariff intake workbook
GUIDE	A 72-page illustrated user manual
DEMO	A fully populated worked demo with six charts

Before you buy

- Desktop Excel 2019 or Microsoft 365. No macros.
- A screening tool using monthly readings and four time blocks, not an hourly dispatch simulation.
- Solar specific yield and local tariff rules are inputs; there is no tariff database.
- Not a project finance model and not engineering design.

Every workbook opens on the complete worked example, so you can follow the finished answer before entering your own data.

WHO BUILT IT

Built by the ExpertPro team

ExpertPro builds the financial and decision infrastructure behind capital projects, at the intersection of project finance, engineering economics and data.

7	100+	15+	50+
senior specialists	years of combined experience	professional certifications	delivered projects

The team

- Project finance and public-private partnerships, PMP® and APMG CP3P® certified
- Data architecture and data science, led by a mathematician
- Process automation and governance, with more than twenty years in banking
- Information security and compliance: ISO/IEC 27001 Lead Auditor and CEH
- Enterprise systems integration and machine-learning engineering

Every model

- Built to the FAST Standard 02c: Flexible, Appropriate, Structured, Transparent
- No macros and no hidden logic; one formula per calculation row
- A documented source and status behind every input
- A checks panel that must read green before results leave the workbook
- A complete user manual and a worked demonstration case

Master's degrees in industrial engineering, information technology and business, a degree in mathematics, and programmes from MIT (applied AI) and HarvardX (data science). Delivery in five Latin American countries, across energy and utilities, transport, logistics, agroindustry and healthcare.