

PowerQuant

Transforming Renewable Project Uncertainty into Actionable Financial Insights

Problem

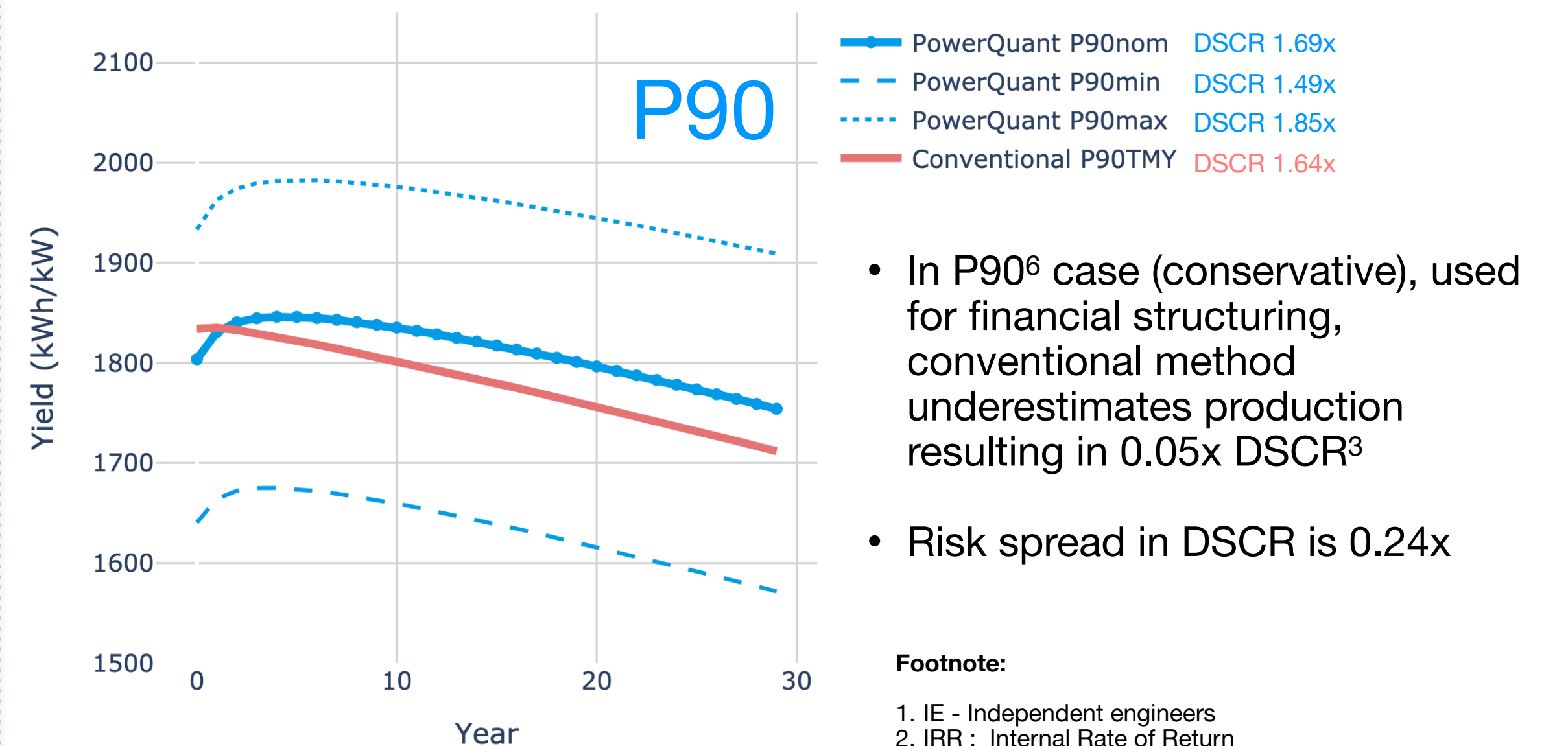
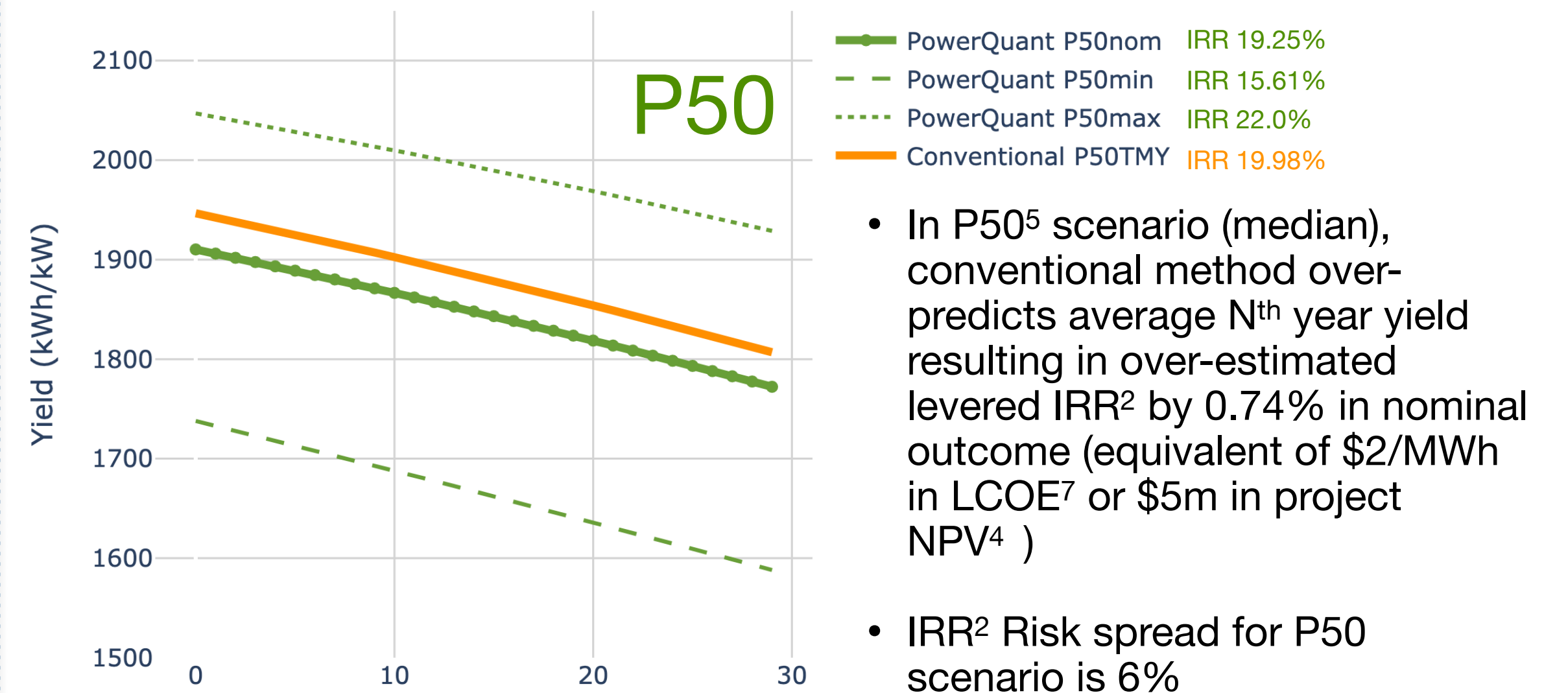
- Existing uncertainty models for solar power plants tend to underestimate risks and overestimate performance at portfolio level by up to 4% [Elser et. al.]
- Comprehensive models are too slow (Monte Carlo methods)
- No off-the-shelf, accessible and actionable solutions exist; status quo workflows requires bespoke IE¹ support

PowerQuant Solution

- Actionable techno-economic uncertainty quantification and management solution for utility scale solar power projects and portfolios
- Powered with methods used for risk reduction in space science/nuclear projects
- Capitalizes on historical datasets for determining defensible uncertainty assumptions

Features	Benefits
Out-year model uncertainty and performance variability	Provides a comprehensive view of long-term performance including a project/portfolio risk spread.
Customizable assumptions	Model non-normal and asymmetric phenomenons (e.g. availability, soiling, degradation)
Computationally efficient	Ensures quick analysis, making it ideal for the iterative nature of project development.
Compatible with existing performance models	Integrates into existing project workflows, promotes early stage, pre-financial structuring insights
Sensitivity analyses	Identifies high-impact initiatives to manage uncertainties, maximizing return on efforts (e.g. measurement campaigns)

Sample Results : 100MW Solar PV plant in Montana



Footnote:

- IE - Independent engineers
- IRR : Internal Rate of Return
- DSCR : Debt service coverage ratio measures a project's ability to cover its debt payments with its available cash flow.
- NPV : Net present value
- P50 : Nominal or Median scenario
- P90 : Conservative scenario
- LCOE : Levelized Cost of Energy