

## Presentation of Phase 3 and WMP

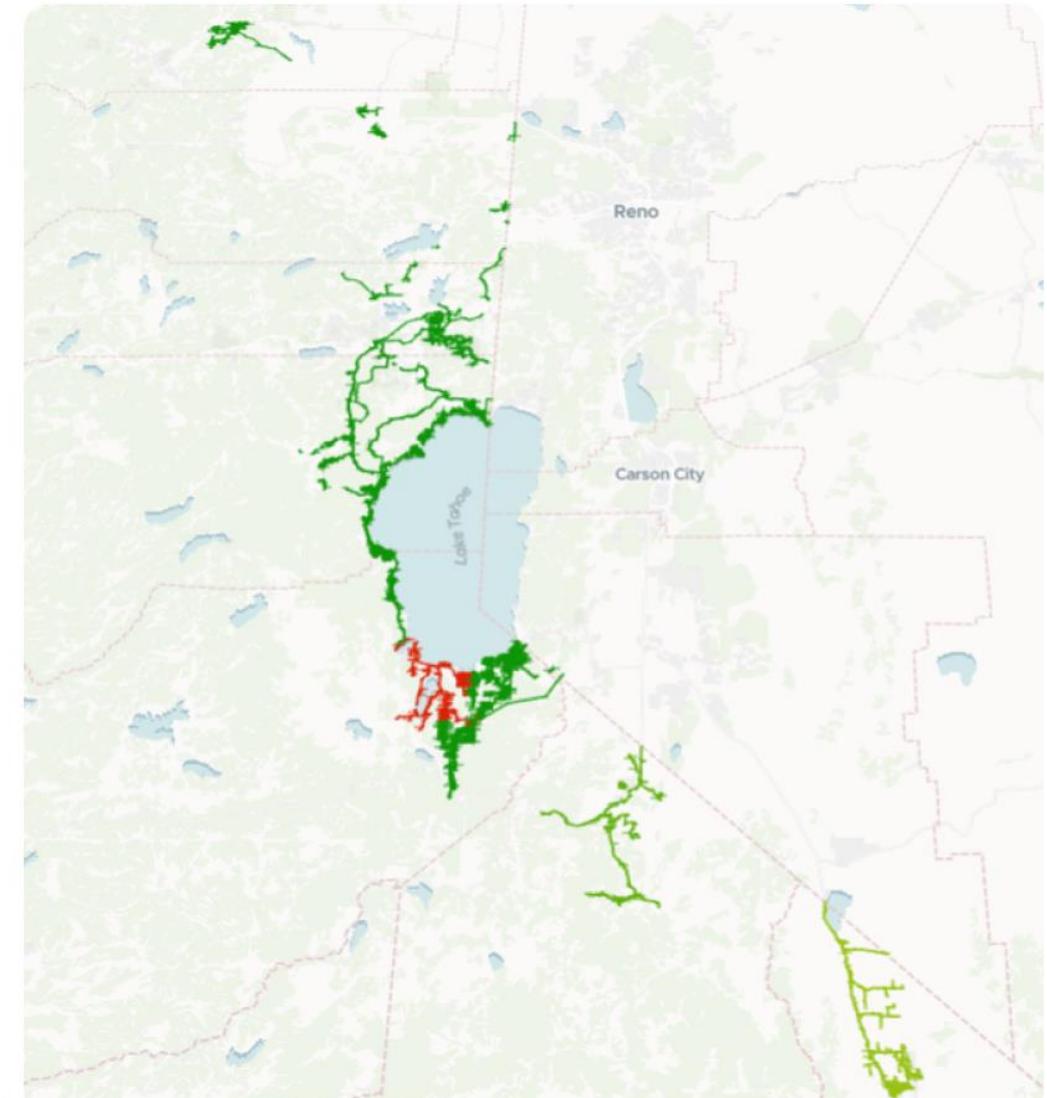
### Support results

Implementation of the *DIREXYON* Suite for distribution assets

**DIREXYON**  
Powering decision-making clarity

 **Liberty**<sup>®</sup>

**Liberty Utility Risk Map - 2025**



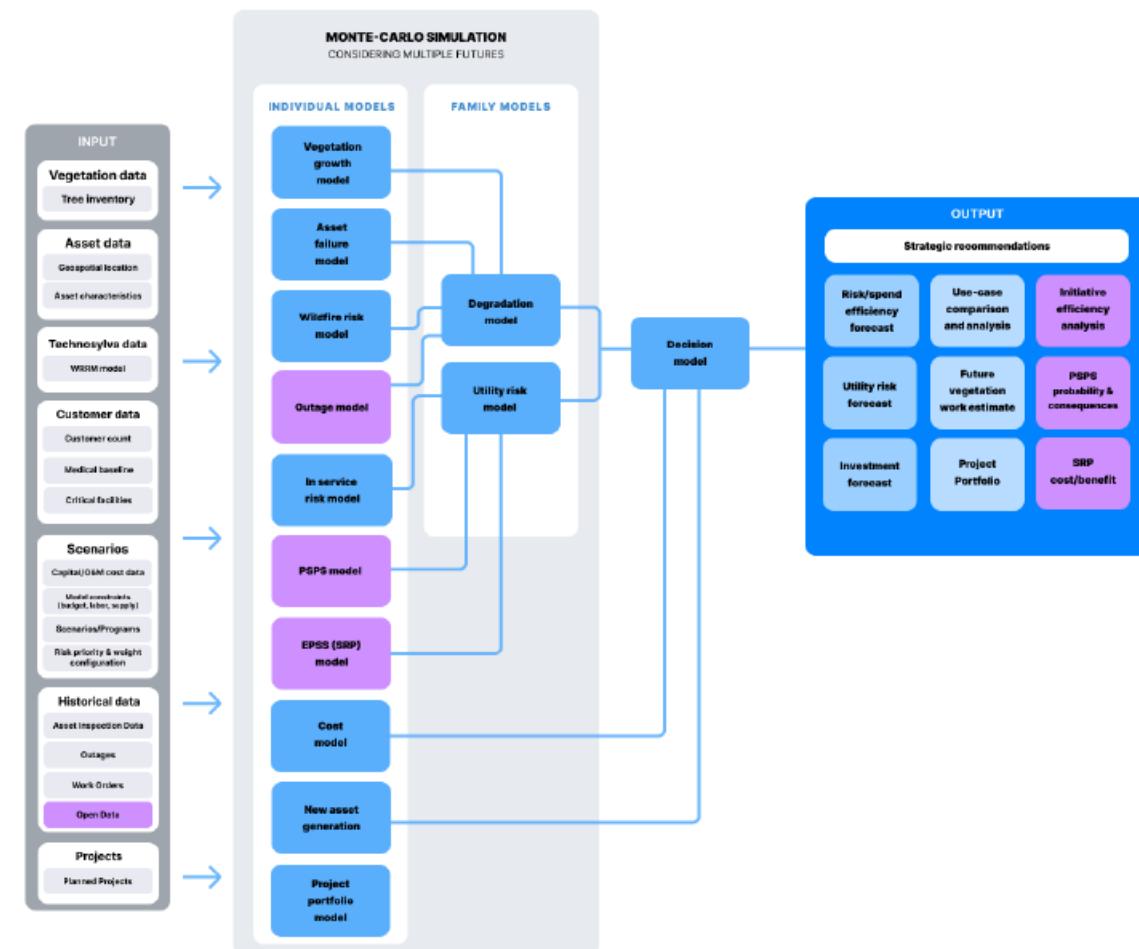
# Agenda

- Executive Summary
- Project Methodology
- Results Presentation
- What can we achieve next?

# Project Scope Overview

Phase 2 expanded and refined the wildfire risk modeling framework to improve **data accuracy, modeling precision, and planning capabilities**.

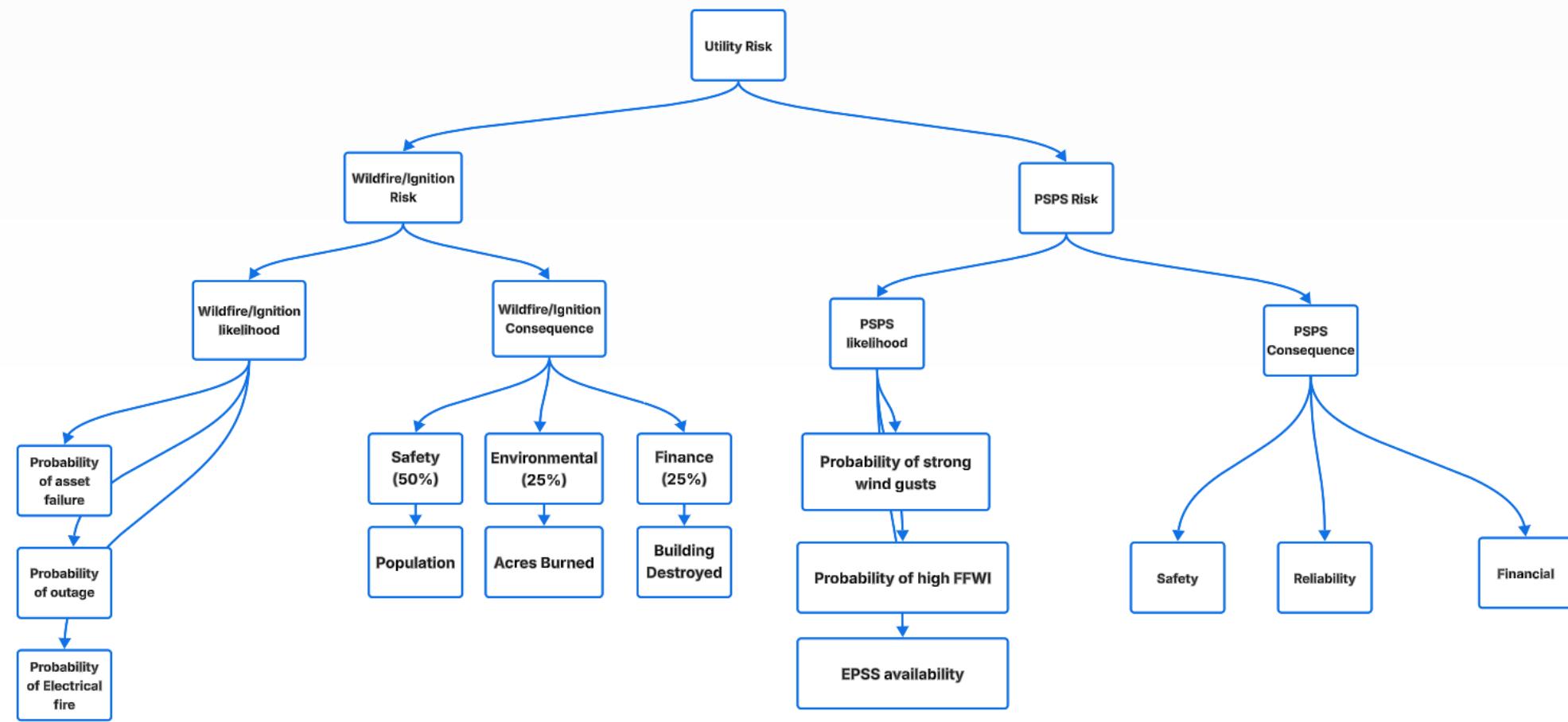
New additions to the solution are in violet on the diagram.



# Key Updates

Criteria	Description
Asset data refresh	Asset data updated per network changes and previous phases outputs.
New asset type integration	Service/secondary overhead conductor added as new asset classes.
Outage model	A new outage model based on historical data was developed to replace the fire risk condition modifier used in earlier versions.
PSPS Risk Model	PSPS model added to the utility risk model using Liberty defined criteria, and FFWI data
EPSS Model	The EPSS model was implemented to assess its impact on fire and PSPS event probabilities.
Generating new insights	PSPS risk assessment across circuits
	EPSS cost/benefit analysis to evaluate PSPS outcomes with and without the setting enabled.
	Efficiency analysis of 20 Liberty fire-risk reduction initiatives
	Evaluation of alternative initiative for two \$7M conductor undergrounding projects over four years

# Project Methodology



# Key Questions Answered

## Strategy Evaluation

How do different initiatives compare in terms of cost, timing, and long-term risk?

WMPInitiativeActivity	Asset Type	electrical fire - count - Benefit / cost (M)
Grid monitoring systems	Circuit	78.3
Equipment settings to reduce wildfire risk	Circuit	6.28
Expulsion fuse replacement	OHF	1.9925
Distribution pole replacements and reinforcements	Pole	0.43
Open wire/grey wire	Secondary_Conductor	0.023333333
Vegetation Management Inspection Program - Detailed	Vegetation	0.017102636
Undergrounding of electric lines and/or equipment	Conductor	0.011482704
Wood and Slash Management	Vegetation	0.006263208

# Key Questions Answered

## General Rate Case justification

What level of risk mitigation can be expected if the proposed initiatives are implemented, versus no intervention?

Characteristic	Normal	No PSPS initiative	No Wildfire initiative	No asset failure initiative
PSPS Risk	0.005435679	0.00552819	0.009831112	0.005611003
Fire Risk	7.81668E-06	7.94747E-06	2.24491E-05	1.08212E-05
In Service Risk	0.001548232	0.001692822	0.002255339	0.002200451
Utility Risk	0.002721748	0.002768069	0.00492678	0.002810912
Budget	62,805,536.98 \$	52,716,679.53 \$	2,288,407.36 \$	13,216,011.08 \$

Characteristic	Decrease (%) Per 1 M - No PSPS initiative	Decrease (%) Per 1 M - No Wildfire initiative	Decrease (%) Per 1 M - No asset failure initiative
PSPS Risk	0.001686929	0.013361941	0.000650426
Fire Risk	0.000266412	0.029805427	0.006120112
In Service Risk	0.001486979	0.007271953	0.006707485
Utility Risk	0.000270976	0.012899392	0.00052161

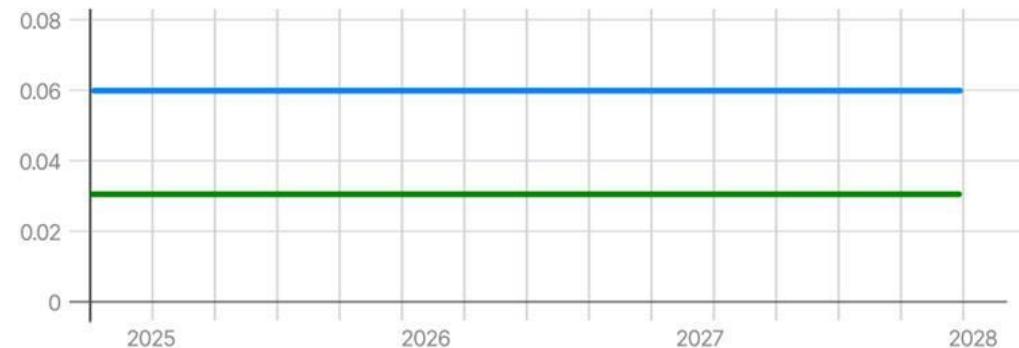
# Key Questions Answered

## Strategy Evaluation PSPS risk

How do different mitigation strategies affect PSPS?

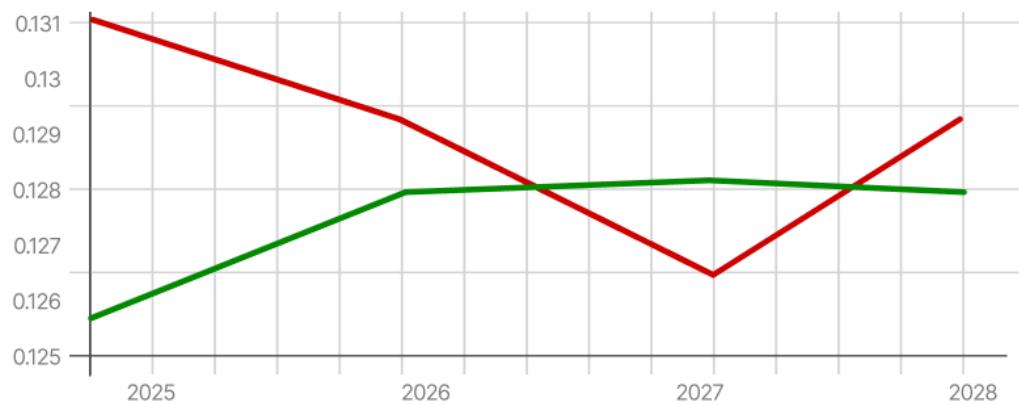
### Average Probability of PSPS

● Baseline - V2 - Normal      ● Initiative V2 - Without SRP - Normal



### Average PSPS Consequence

● Baseline - V2 - Normal      ● Initiative V2 - Without Fault Indicators - Normal

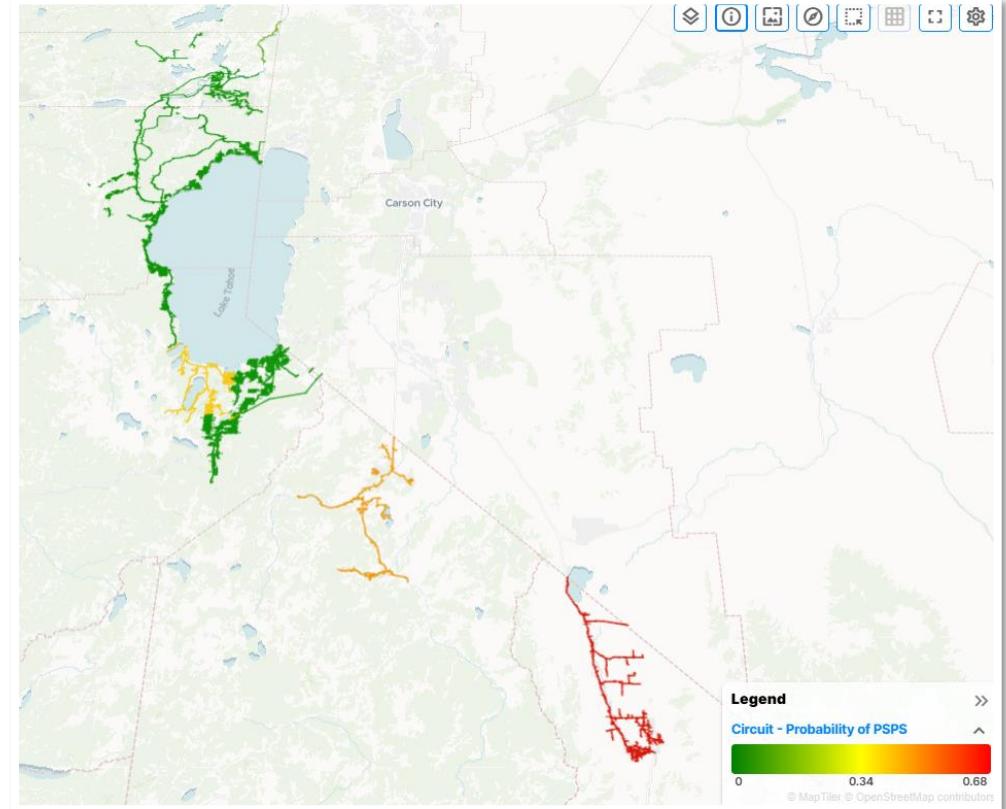


# Key Questions Answered

## PSPS risk evolution

Which circuits have the highest potential for PSPS events?

Circuit	Probability of PSPS ↓
TPZ1202 Circuit	0.68
MULLER1296 Circuit	0.46
MEY3400 Circuit	0.38
WSH201 Circuit	0.11
T619 Circuit	0.04
CEM41 Circuit	0.04
TRK7203 Circuit	0.01



# Understanding the value of the Direxyon Solution for Liberty



In-house simulation of **strategic and tactical** scenarios



Realistic, scalable wildfire risk model to **guide mitigation efforts**



Proactive risk mitigation and **long-term planning** capabilities



Ability to **create and test project portfolio** to identify ideal replacements



Support for grant funding through **project impact modeling**

# Self-serve Analysis by Liberty

## Budget & Constraints

Testing the different outcomes based on different budget allocation to each initiatives

## New initiative evaluation

Testing new fire mitigation strategies using Portfolio

## Project efficiency evaluation

Evaluating efficiency of each project through simulations

# Future implementations and their potential impact

Recommended area	Benefits to Liberty
Data refresh	Track evolution of the assets and key metrics; Validate models' ability to predict.
Integration of other asset classes	Extend model and planning scope
Failure Model refinements	Incorporating seasonal or weather-dependent variations for more accurate failure estimation
PSPS model enhancement	Incorporate climate change impact on PSPS Evaluate grid hardening impacts on PSPS Incorporate logic to shutdown part of circuit during PSPS and SRP

# Future implementations and their potential impact

Recommended area	Benefits to Liberty
Model Multiple Events per Year	Simulate multiple PSPS and SRP events per circuit annually to better reflect reality
Enhance Vegetation Risk Modeling	Define fire risk profile based on tree species Evaluate impact of fuel management practices on risk reduction Improve vegetation growth model
Refine Outage model	Improve outage modeling for key assets by refining probability estimates through expert input, data integration, and asset-specific analysis.
Generate portfolio output	Define and Integrate Reliability metrics Generate list of future projects grouped by initiative
Climate Integration	Integrate trend and effects of climate changes
Validation	Back testing, validate number of breaks replacement, etc.

# Appendix

# Latest information

Links to final Direxyon documents used to produce the report

Category	ID	Name	Link
Dataset	2575	2024 - Reviewed	<a href="https://liberty-calpeco.direxyon.com/DataSet/2575/Config">https://liberty-calpeco.direxyon.com/DataSet/2575/Config</a>
Model	2543	Liberty (Phase 3) - Official	<a href="https://liberty-cal-peco.direxyon.com/Model/2543/AssetTypeList">https://liberty-cal-peco.direxyon.com/Model/2543/AssetTypeList</a>
Results	14620 - 14922	All results set between those ID 14620 and 14918 included (23 simulations)	<a href="https://liberty-calpeco.direxyon.com/Re-sultSetList">https://liberty-calpeco.direxyon.com/Re-sultSetList</a>
Dashboard	727	Phase 3 - Final	<a href="https://liberty-calpeco.direxyon.com/Dashboard/727/Page/2">https://liberty-calpeco.direxyon.com/Dashboard/727/Page/2</a>
Portfolio	631	Portfolio - Importation - 2025 (Undergrounding)	<a href="https://liberty-calpeco.direxyon.com/Portfolio/631">https://liberty-calpeco.direxyon.com/Portfolio/631</a>
	632	Portfolio - Importation - 2025 (Cover)	<a href="https://liberty-calpeco.direxyon.com/Portfo-lio/632">https://liberty-calpeco.direxyon.com/Portfo-lio/632</a>
	633	Portfolio - Importation - 2025 (Replacement)	<a href="https://liberty-calpeco.direxyon.com/Portfo-lio/633">https://liberty-calpeco.direxyon.com/Portfo-lio/633</a>