

BUILDING A WORLD OF DIFFERENCE

PASADENA WATER & POWER CUSTOMER PUBLIC MEETING OCTOBER 16, 2014

2014 Integrated Resource Plan Evaluation

Black & Veatch Corporation

Oct 16, 2014



BLACK & VEATCH
Building a world of difference.®

RESOURCE PLAN EVALUATION

RESOURCE PLAN DEVELOPMENT

RPS Goals

- 40%, 45%, 50%, 70% RPS Levels
- Blended Renewable Mix or All Solar

GHG Neutral Portfolio

- High Renewables >70% and min generation from IPP
- Existing Natural Gas plants burn biogas
- No wholesale market purchases

IPP

- Retirement in 2020, 2025 or 2027
- Voluntary IPP Generation Output Reduction/Retire
- IPP Replacement Options

TOP RESOURCE PORTFOLIOS

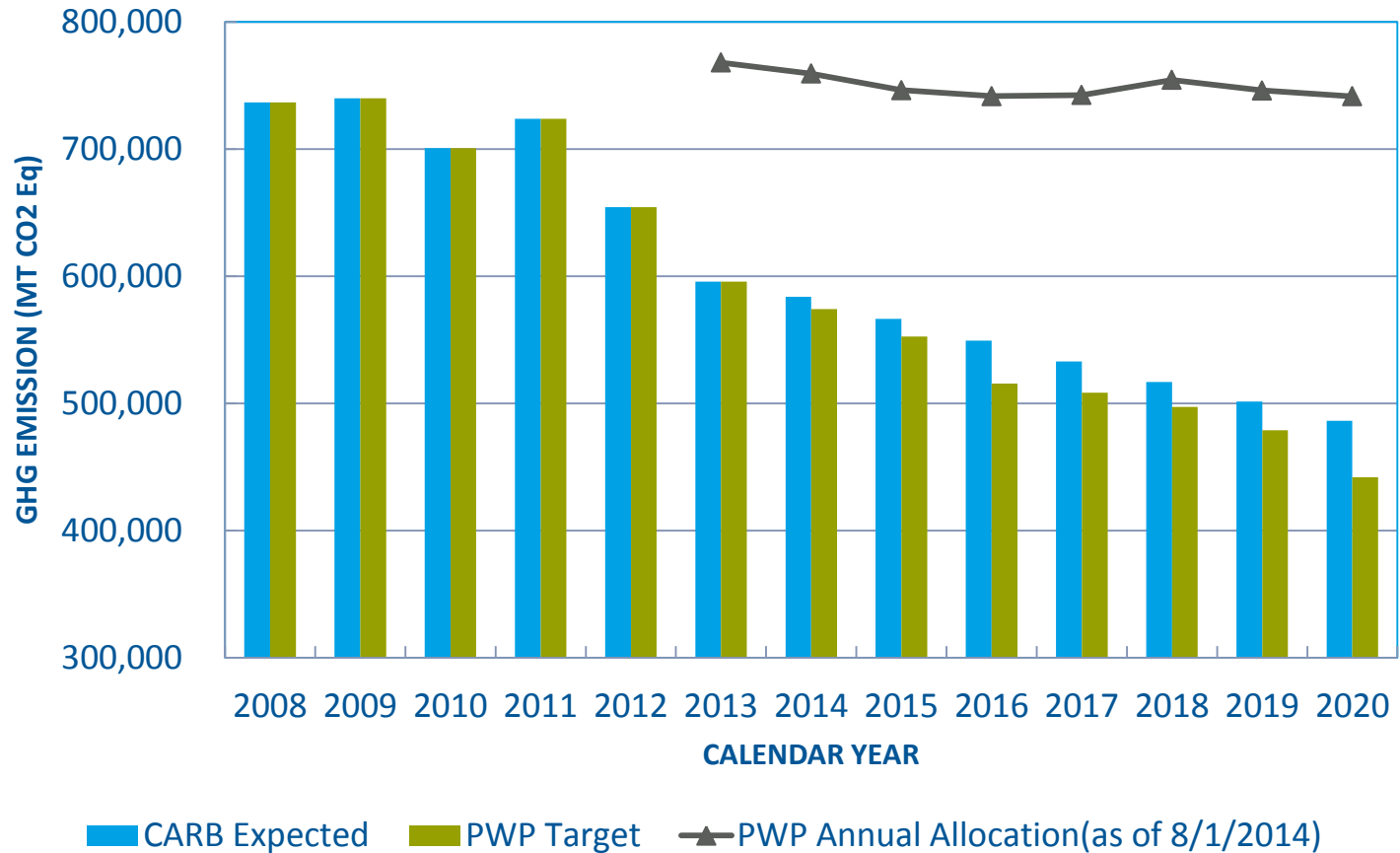
Portfolio	Portfolio Name	2020 RPS	2025 RPS	2030 RPS	IPP
1	Business As Usual	40%	40%	40%	2027
2	Reduced IPP Output	40%	40%	40%	Reduced Output
3	Blended - 50% RPS	40%	50%	50%	Reduced Output
4	Blended - 70% RPS	40%	50%	70%	Reduced Output
5	GHG Neutral Portfolio *	40%	50%	70%	Reduced Output

* Burns biogas and no market purchases

Target RPS levels and the future of IPP are among the key decisions that will impact PWP customers the most

ENVIRONMENTAL CONSIDERATIONS

CARB EXPECTED REDUCTION VS PWP TARGET REDUCTION



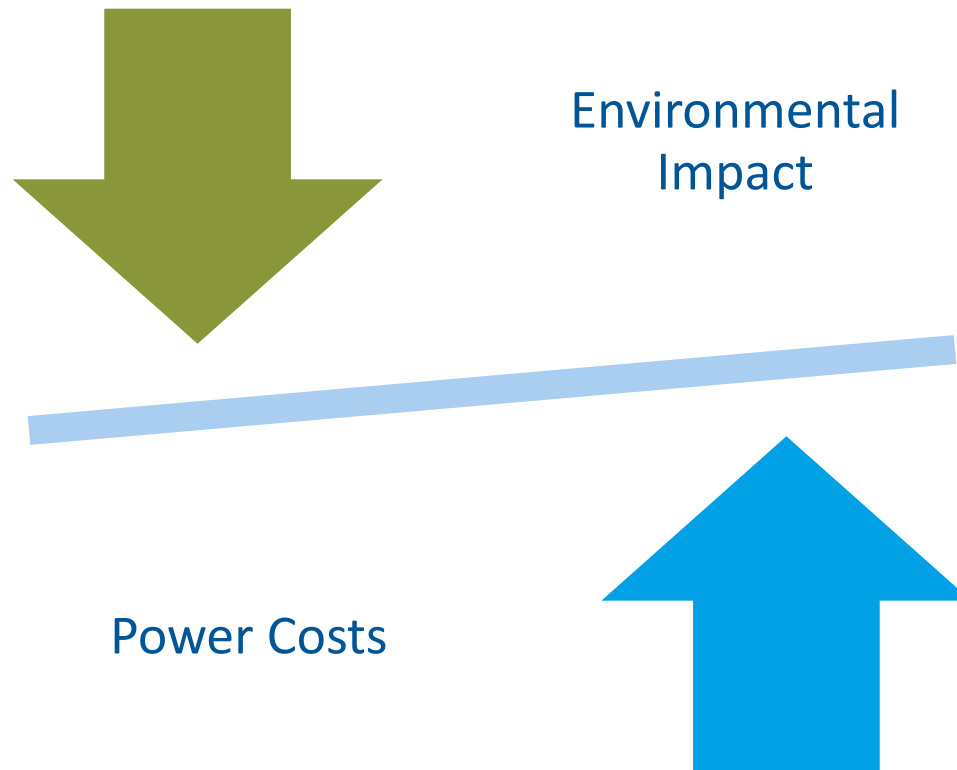
Intermountain coal plant accounts for over 80% of the GHG emissions

PORTFOLIO RESULTS

Portfolio Metrics	1 - BAU	2 -Reduced IPP Output	3 -50% RPS	4 -70% RPS	5 -GHG Neutral
2025 GHG % Reduction Goal from 2008	-4%	-39%	-43%	-43%	-60%
GHG Intensity (lbs/MWh)	914	778	726	667	586

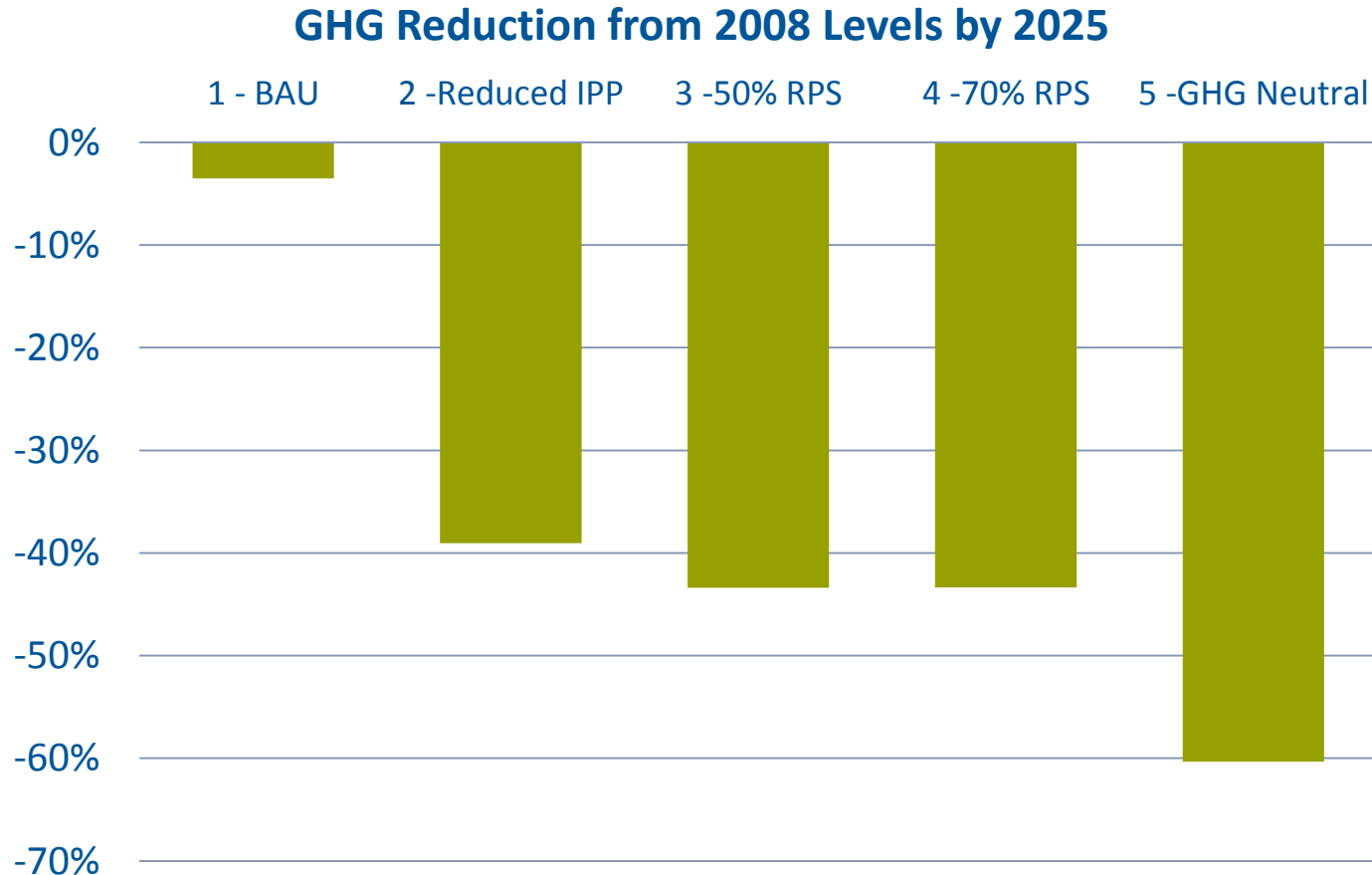
Voluntarily reducing coal generation from IPP is one of the most cost effective ways of reducing GHG emissions

COST BENEFIT ANALYSIS



A key objective of the IRP is maximize environmental benefits while minimizing rate impacts in the most cost effective manner

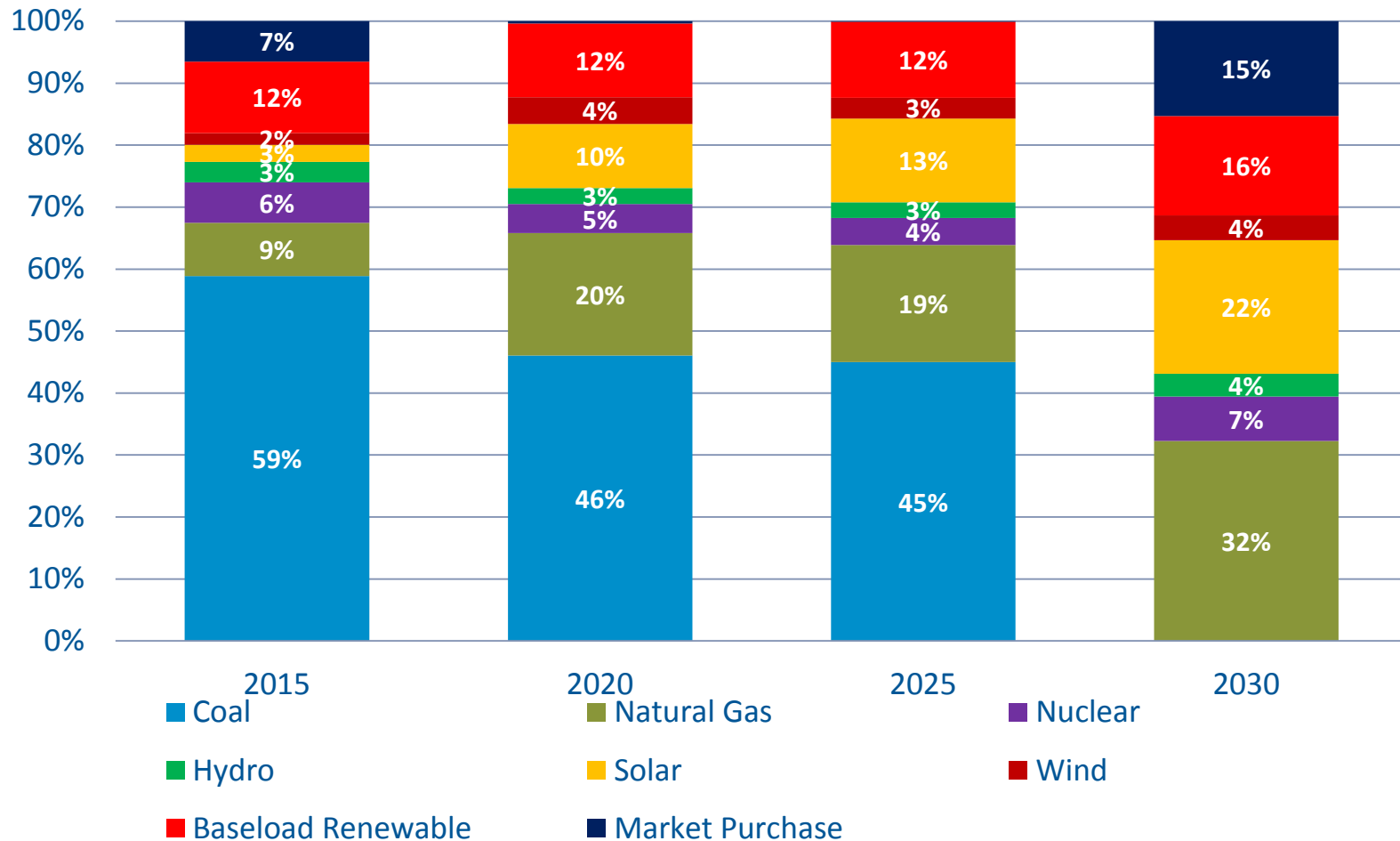
GHG EMISSION REDUCTIONS



Reducing output or retiring IPP provides the largest impact on GHG reduction, but will also increase power costs

POWER SUPPLY CONTENT - BAU

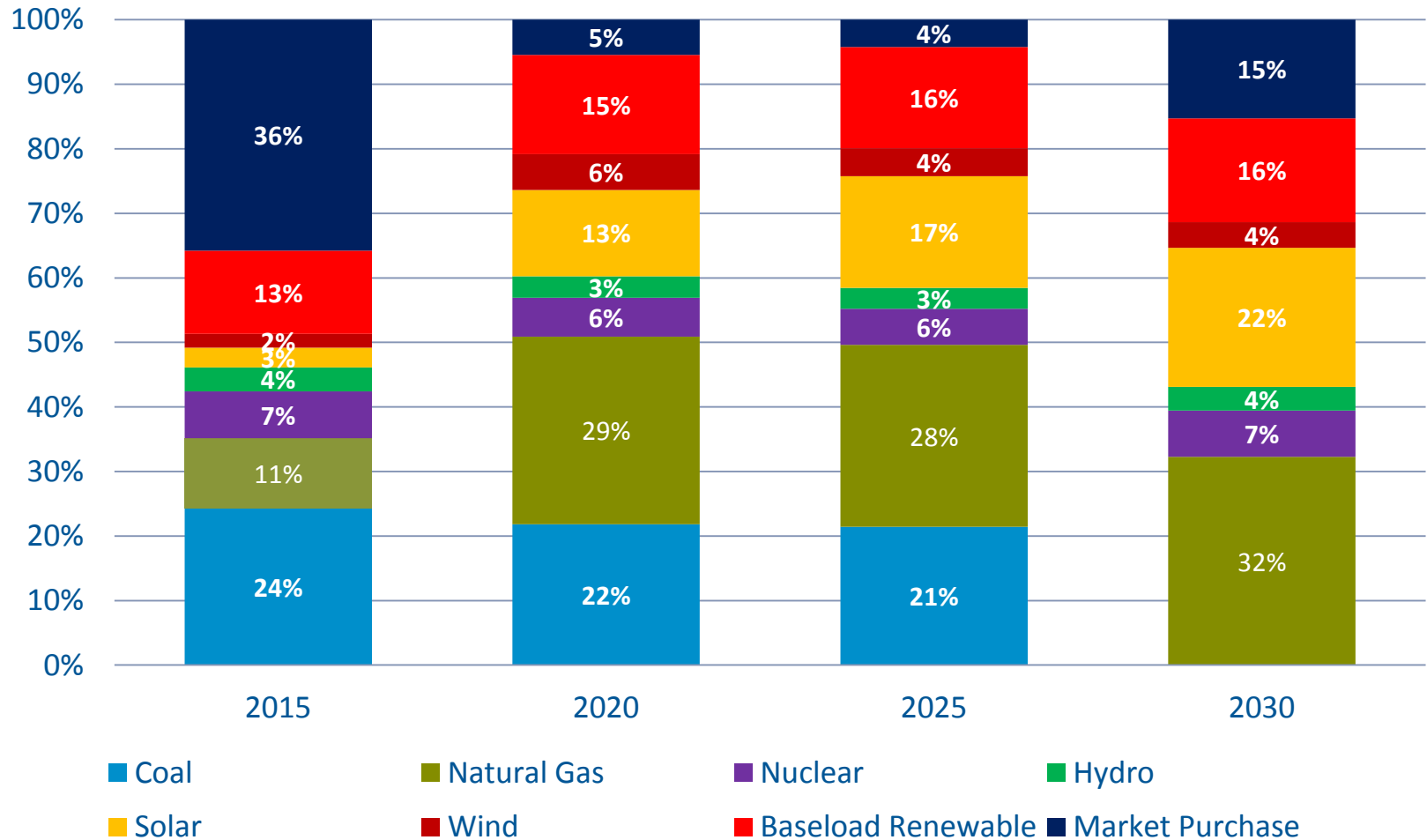
Business as Usual Portfolio



By 2030 coal will be eliminated from the generation mix and will be replaced by natural gas and renewables

POWER SUPPLY CONTENT – PORTFOLIO 2

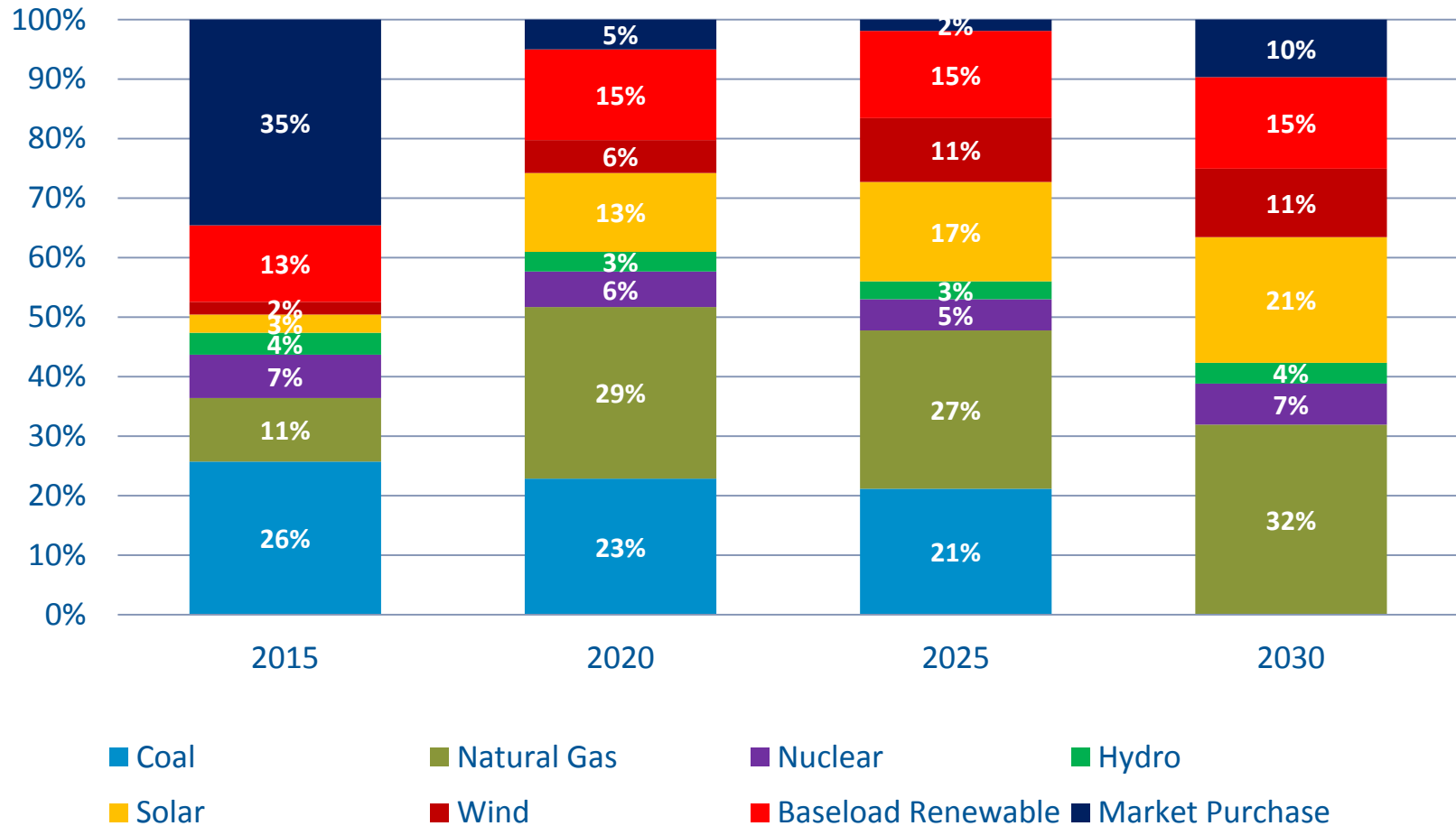
Portfolio 2 – Reduced IPP Output – 40% RPS



By 2030 coal will be eliminated from the generation mix and will be replaced by natural gas and renewables

POWER SUPPLY CONTENT – PORTFOLIO 3

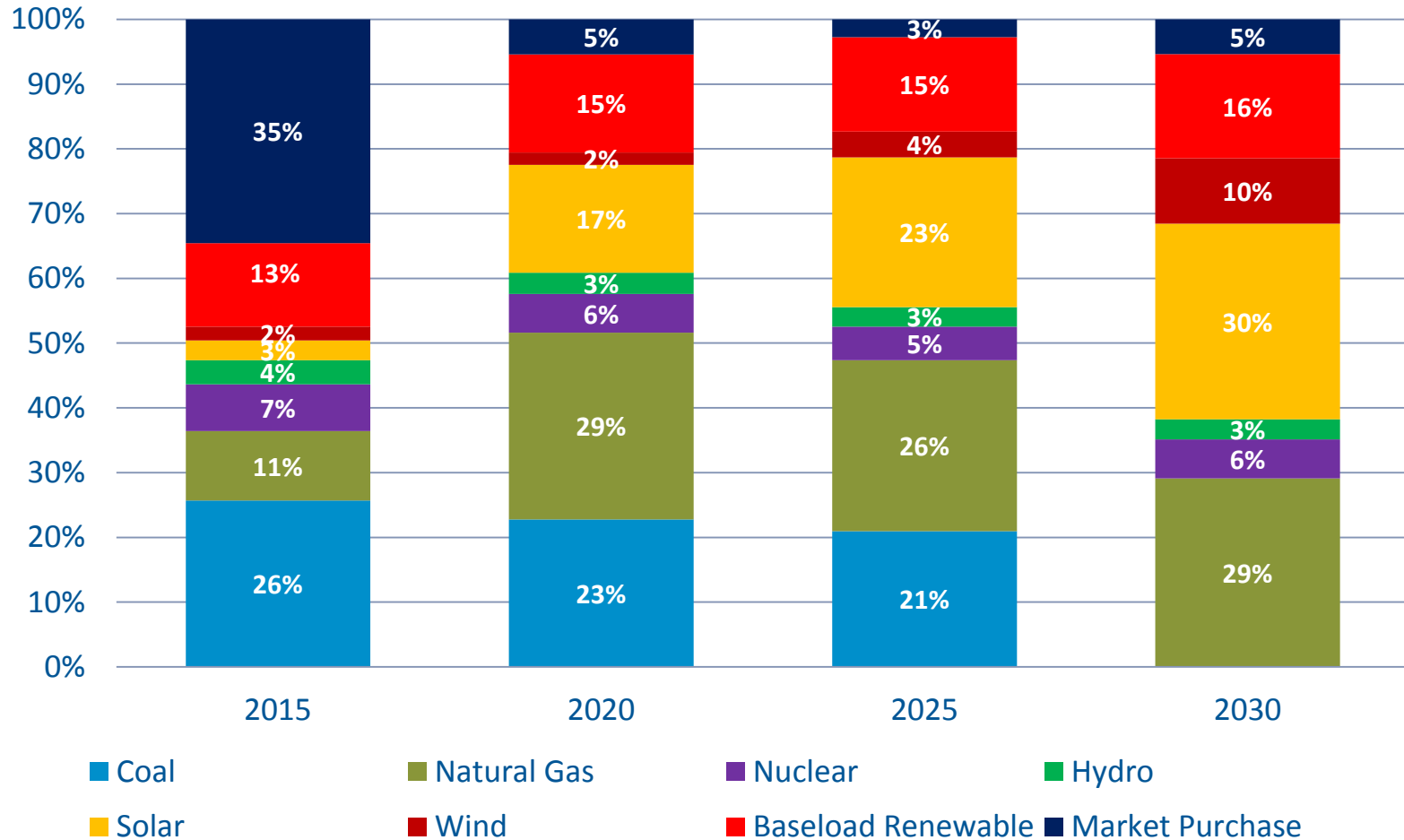
50% RPS Blended Portfolio



By 2030 coal will be eliminated from the generation mix and will be replaced by natural gas and renewables

POWER SUPPLY CONTENT – PORTFOLIO 4

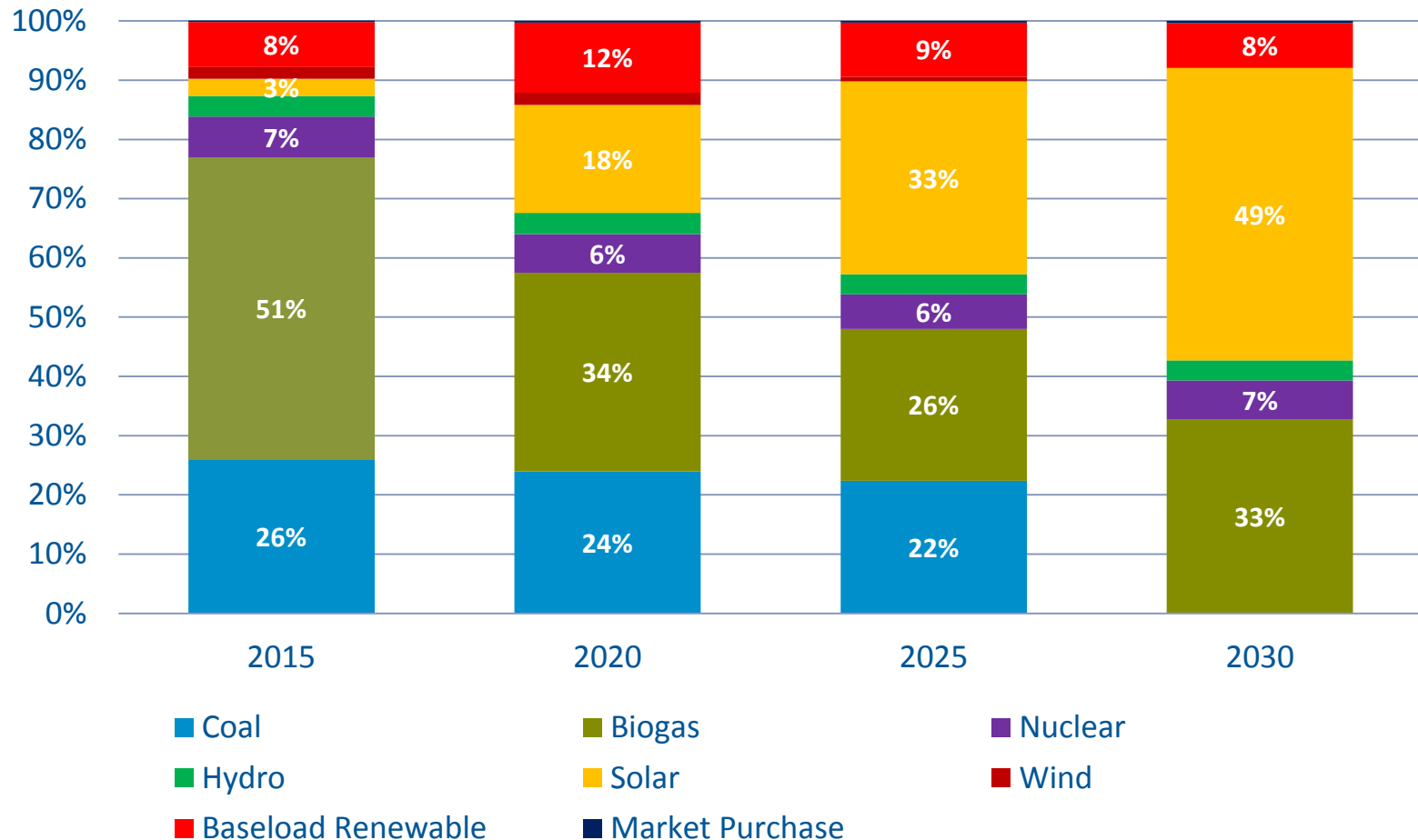
Portfolio 4 – 70% RPS IPP Reduce Output



By 2030 coal will be eliminated from the generation mix and will be replaced by natural gas and renewables

POWER SUPPLY CONTENT – PORTFOLIO 5

Portfolio 5 - GHG Neutral by 2027



By 2030 coal will be eliminated from the generation mix and will be replaced by biogas and other renewables