



Carbon Costing for CAP164

Presentation for Environmental
Standing Group



Agenda

- Background
- Basic Principles
- Stages of the process

- Next steps



Background

- CAP164 – Connect and Manage
- Present queue of generation projects awaiting transmission infrastructure reinforcements
- Under CAP164 will not have to wait for wider works and SO will have to manage constraint implications
- Purpose of CBA is to assess any carbon saving benefits against any constraint cost increases



Principles

- Be as realistic as possible, but try to keep simple
- Forecast nature of key variables means that this is not a prediction
- Would be an assessment of probable outcomes against given scenarios
- Focuses on CAP164, but may want to carry out for other amendments
- Focuses on carbon, not constraints, but need to be mindful of constraint analysis



Stages of process

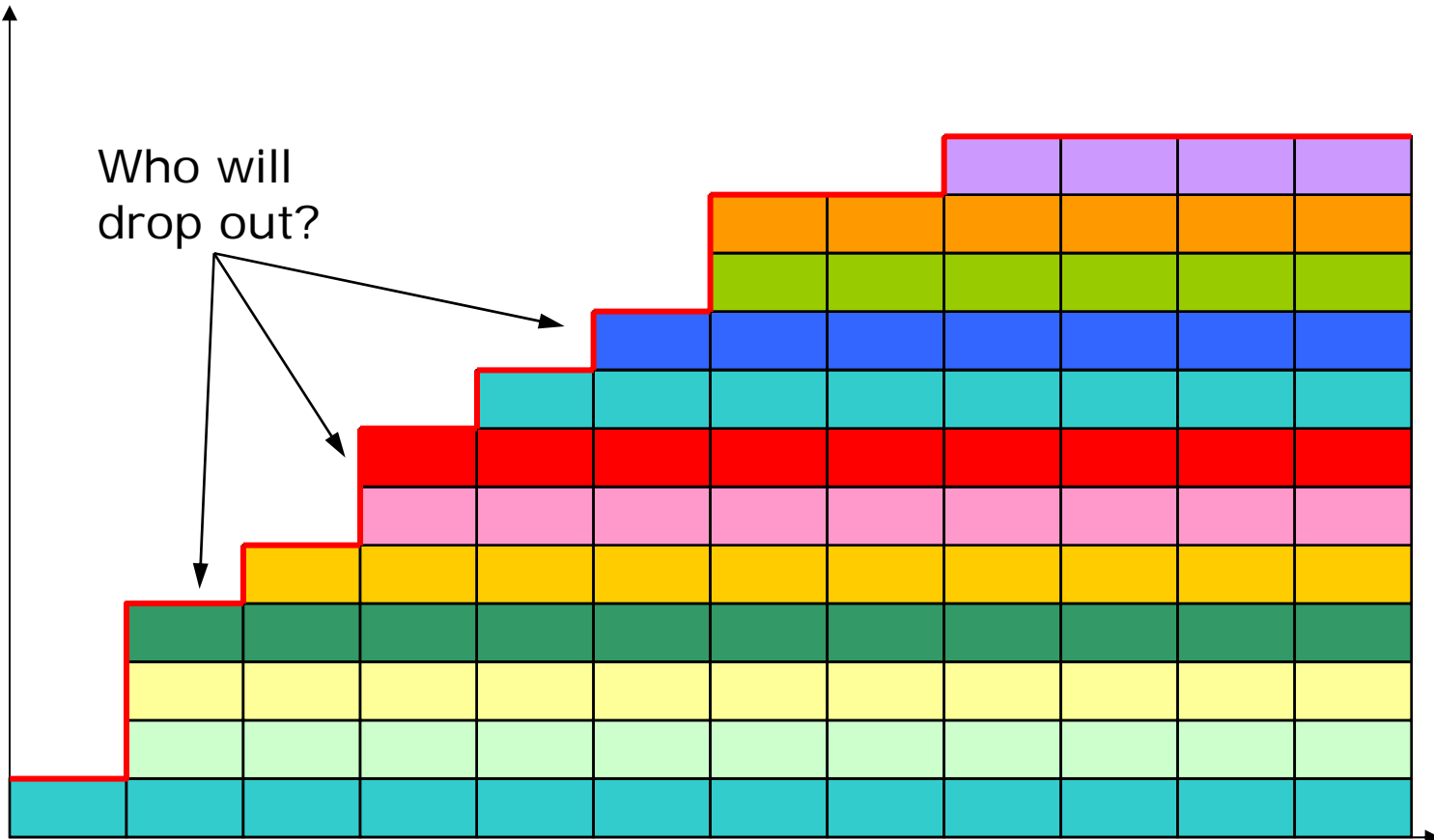
1. Establish baseline
2. How would profile be altered by CAP164?
3. Impacts on CO2 emissions
4. Price CO2 savings and costs



Stage 1 – Establish Baseline

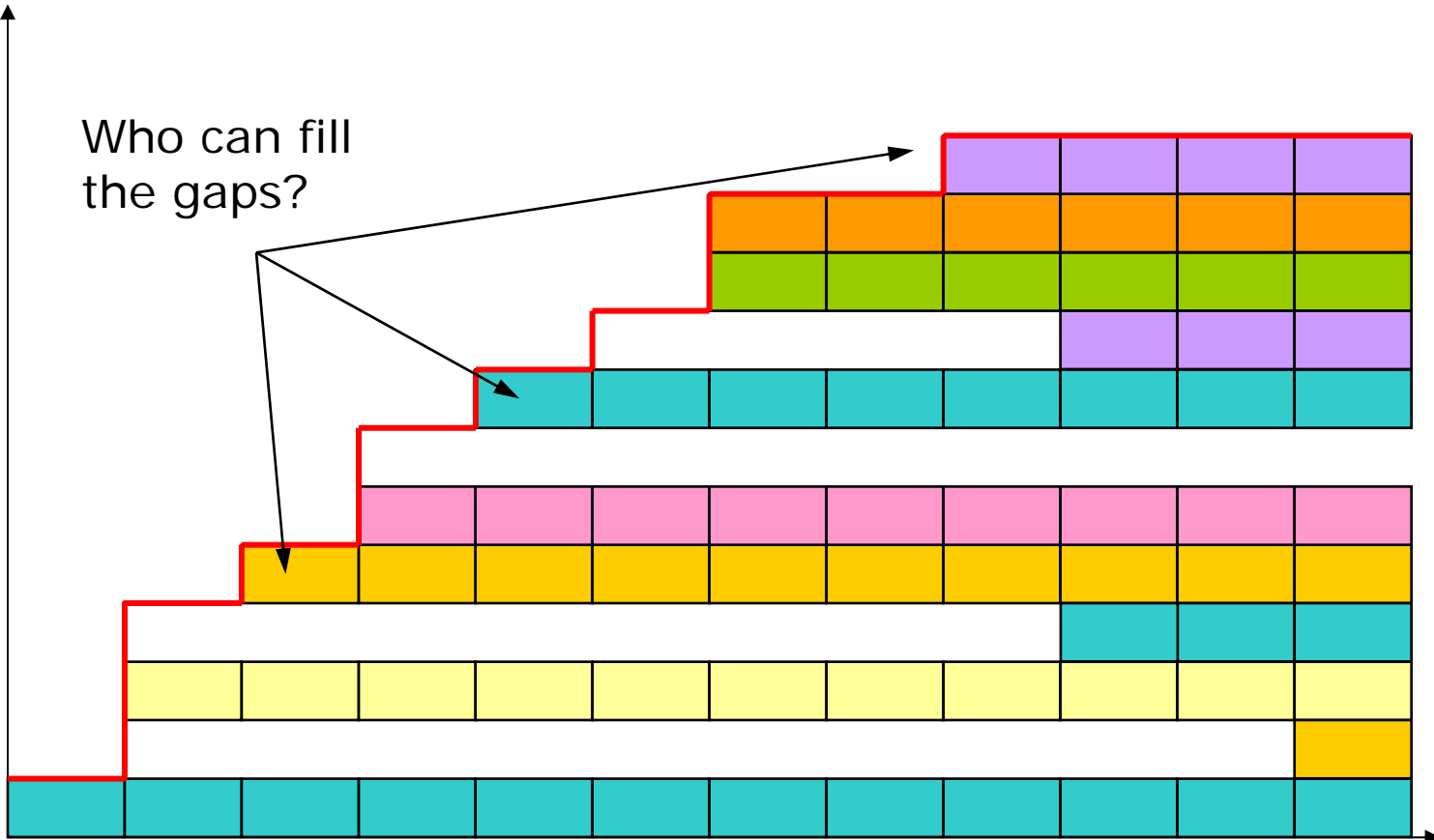
- What would connect if CAP164 were not implemented?
- Contracted background forms basis but who will commission?
- Need to estimate who will drop out (eg. due to failure to achieve planning)

Establish baseline



Establish baseline

Who can fill the gaps?





Establishing Baseline

- Proposal is to estimate drop out by zone taking into account local planning issues
- Need to make assumption of effect of CAP150
- What existing plant will close – so we can estimate fuel mix of conventional plant displaced
- Proposed to use a number of scenarios rather than one baseline (eg to reflect possible transmission delays)?

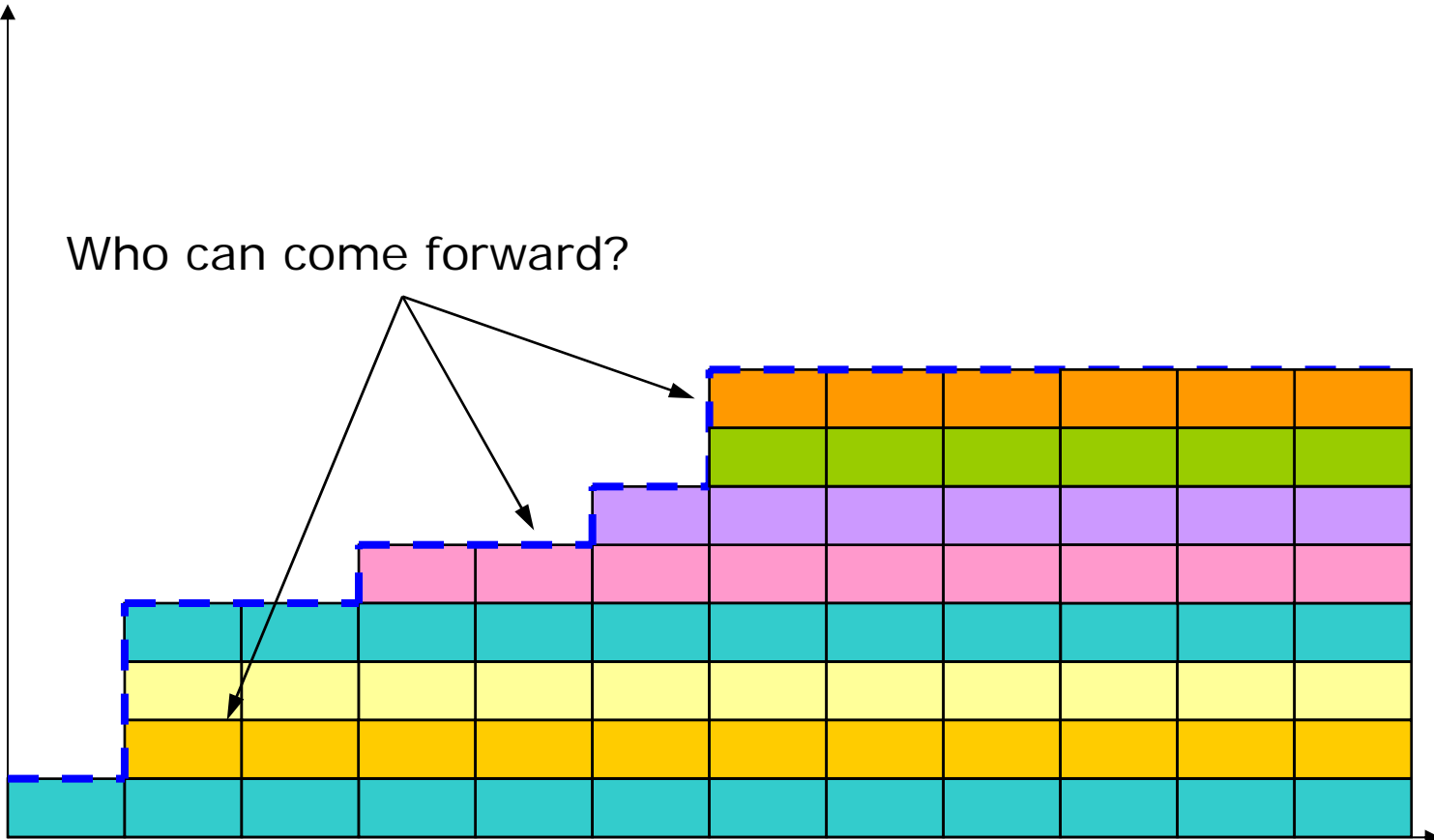


Stage 2 – How would profile change?

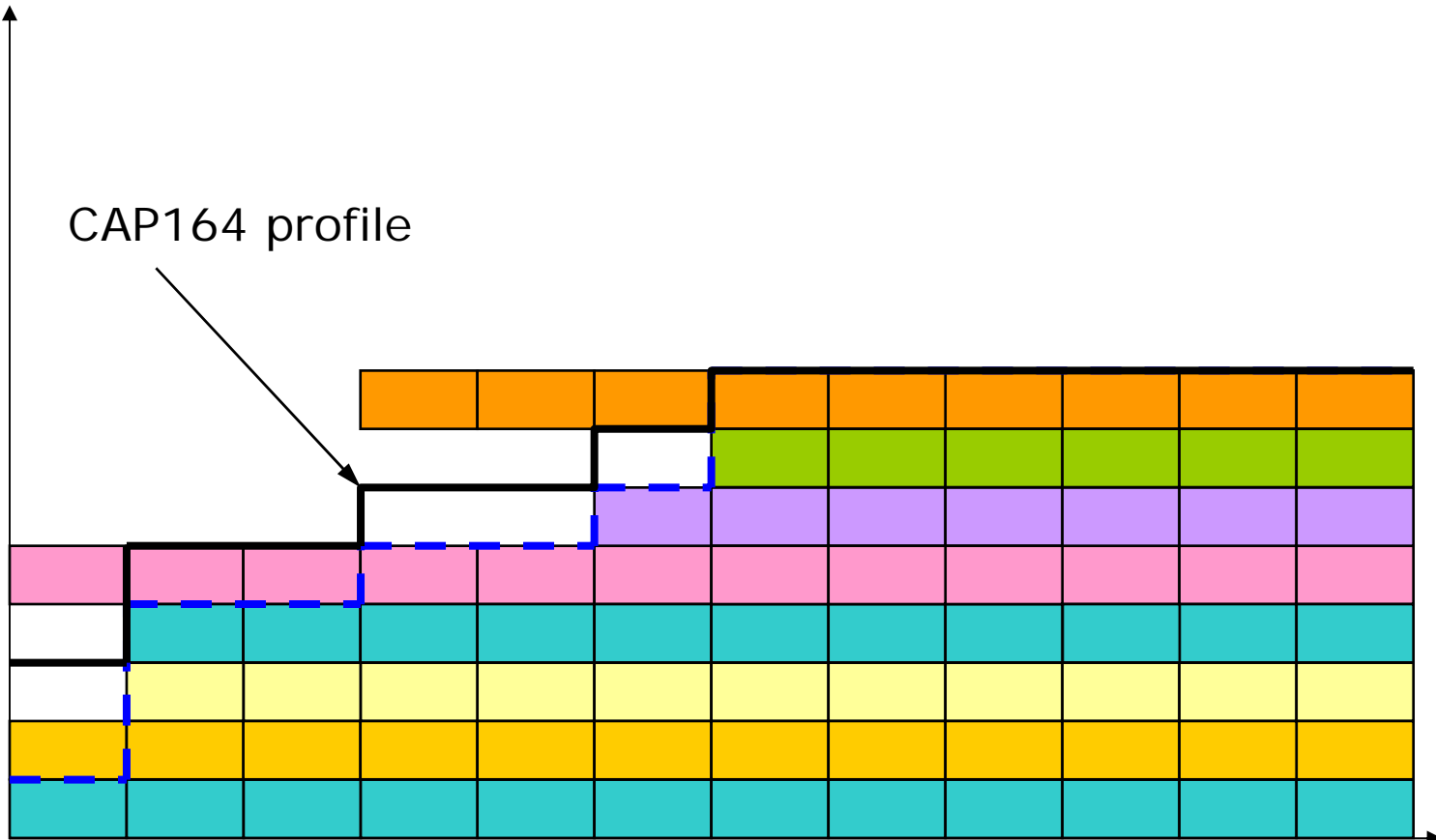
- What projects in background are awaiting wider transmission reinforcement and could benefit from CAP164?
- How many of these could advance local works?
- What proportion could bring forward their generation projects? (eg status of planning/turbine availability)

How would profile change?

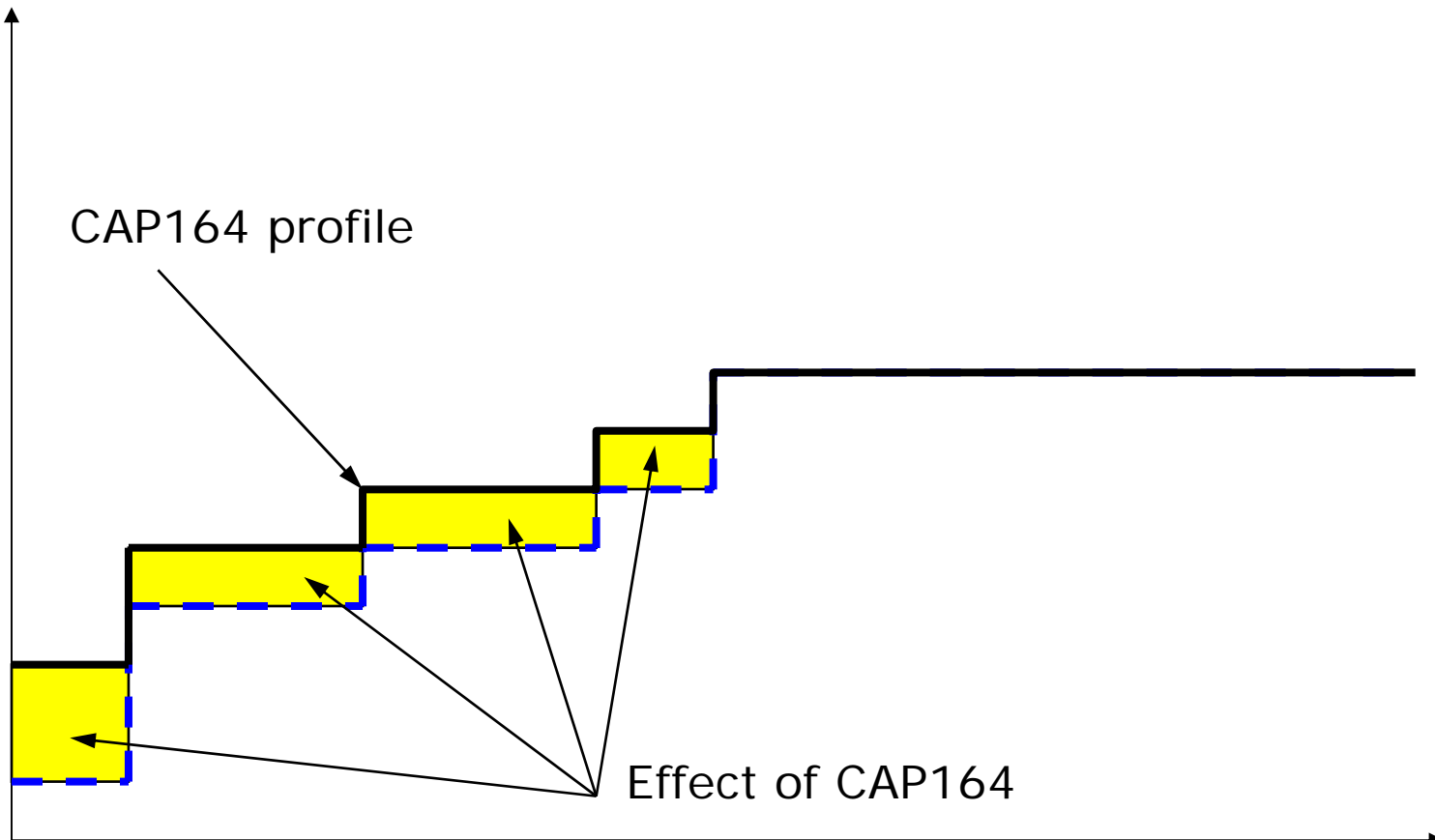
Who can come forward?



How would profile change?



How would profile change?





How would profile be altered?

- Proposal is to carry out analysis of who can come forward on zonal basis (same as with setting baseline)
- Allows assumption of local planning rates
- Allows assessment of role of wider transmission investment? (ie CAP164 only benefits those who are being held up by wider reinforcements)



Stage 3 - Impacts on CO₂ emissions

- What amount brought forward is renewable or lower CO₂ conventional?
- What load factor will the plant operate at? For wind this can be calculated for a zone. What to assume for new conventional?



Stage 3 - Impacts on CO2 emissions

- Displacement of marginal plant. What will this be? Looking at using a range between CCGT and Coal.
- Is this at NBP or by zone? If carbon costs or benefits affected by constrained running of renewable or conventional plant, maybe by zone.
- Proposal is to ascertain whether constraints would restrict displacement of marginal plant at NBP.

- Any increased emissions from part loaded plant?
- Need to use different CO2 values for part loading to reflect efficiency differences



Losses

- National Grid can calculate losses if know assumptions of size and location of output
- Assume losses require more output from marginal plant



Transmission Infrastructure

Assumption for CAP164:

- Local works will be brought forward (SPC changes by year)
- Wider works unaffected, as needs SQSS change.
- Proposal is not to assess transmission infrastructure for CAP164



Stage 5 – Multiply CO2 effects by price of carbon

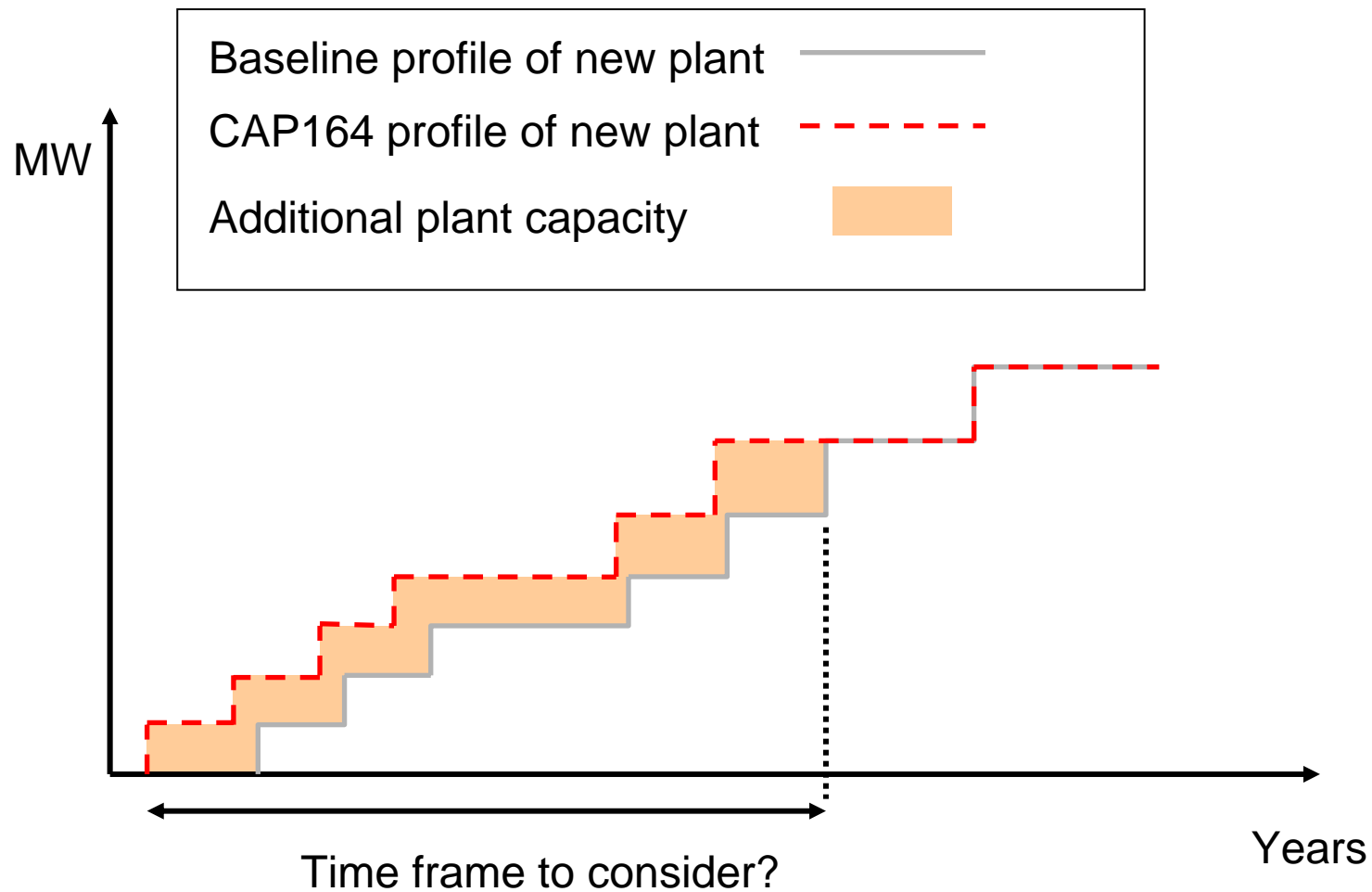
- Recommendation is to use SPC as this most likely to be the value Ofgem uses.



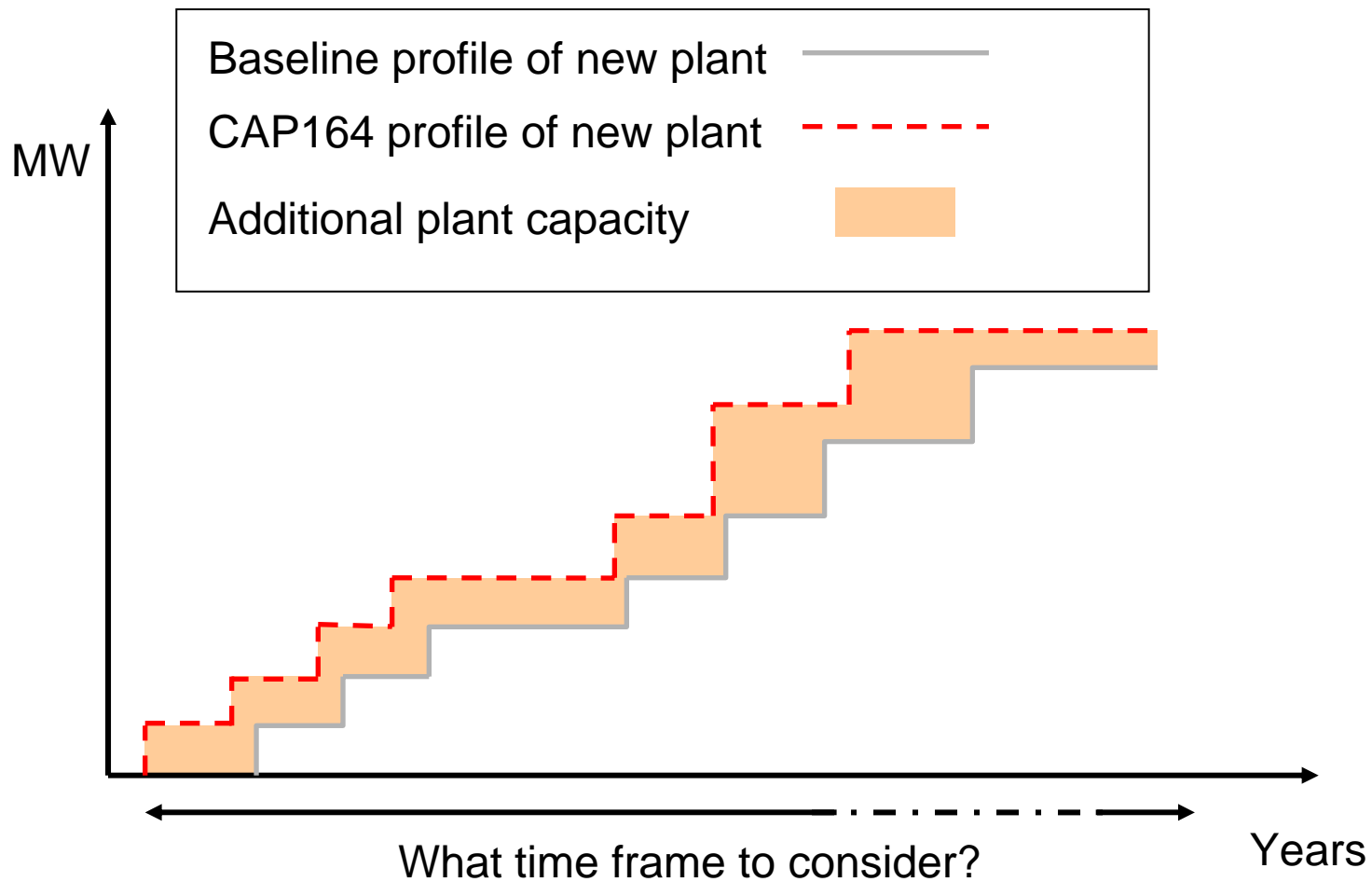
Other issues

- What time period to carry the analysis over?
- Should we consider other emissions?

What time period? Scenario 1 - profile brought forward



What time period? Scenario 2 - ongoing benefit

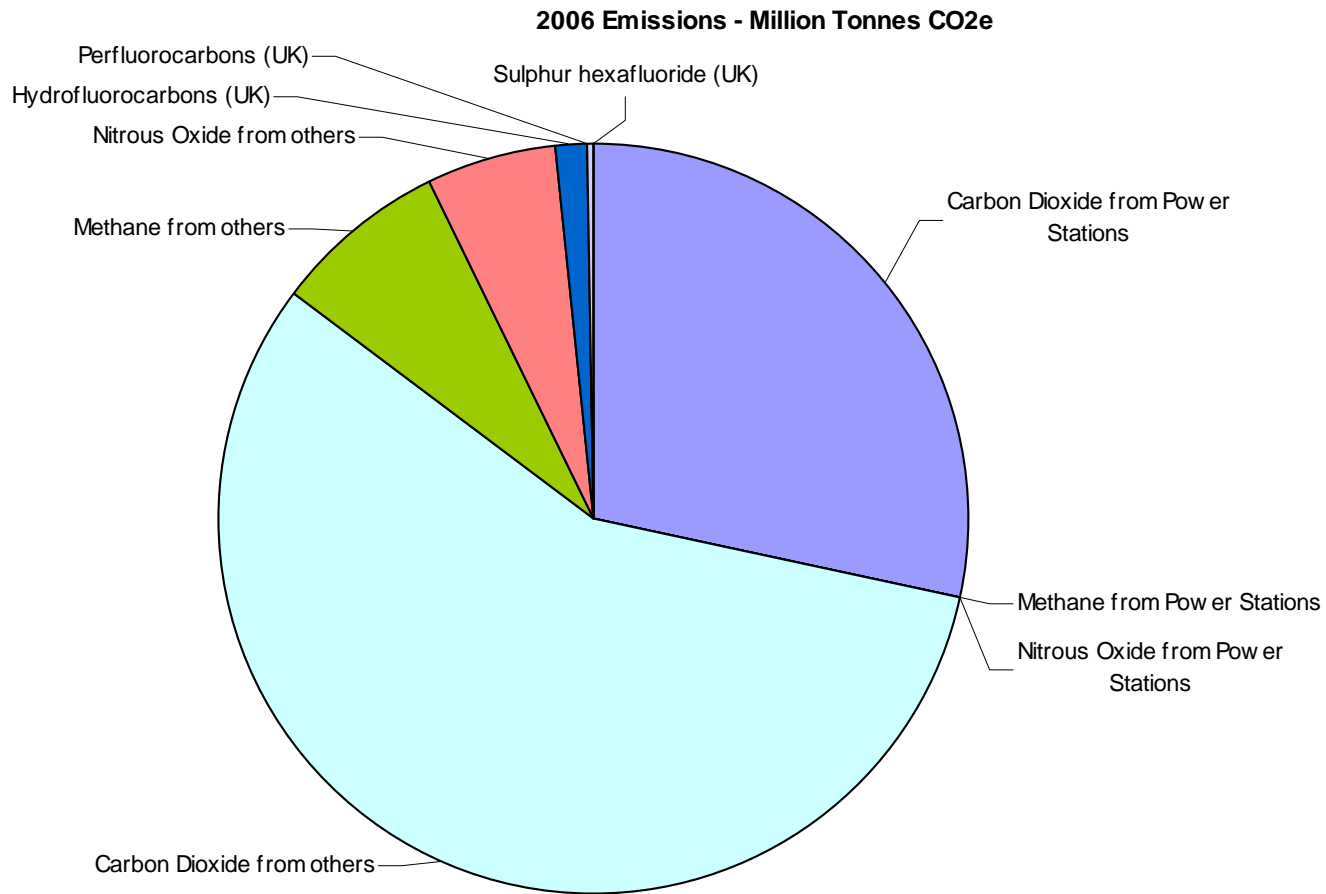




What time period to carry the analysis over?

- Scenario 1 – Profile brought forward
 - When additional constraint and carbon effects cease
- Scenario 2 – Ongoing effect
 - Backstop of 2020

Consider other emissions?





Summary approach

- Scenarios rather than one baseline
- Analysis carried out at zone level (can consider local planning, wind conditions, transmission reinforcements and effect on constraints and losses)
- Use range of marginal plant between CCGT and coal for CO₂/MWh (subject to effects within zones)
- Ignore transmission investment
- Count losses as increased marginal output
- Use SPC
- Only consider CO₂
- Backstop date of 2020



Next Steps

- Start work on baseline
- Then, once amendment is finalised stage 2 can commence

- National Grid to lead this element with active input from the subgroup