

Technology From Ideas

- ▶ Technology Development Company
- ▶ TFIMarine spinout
 - ▶ Focussed on Polymer Based Marine Components
 - ▶ Moorings
 - ▶ ByPass Elastomers
 - ▶ Dynamic Tethers
 - ▶ Polymer Springs
 - ▶ New Product Development
 - ▶ Gators
 - ▶ Structures

Mooring Challenge



Why Polymer

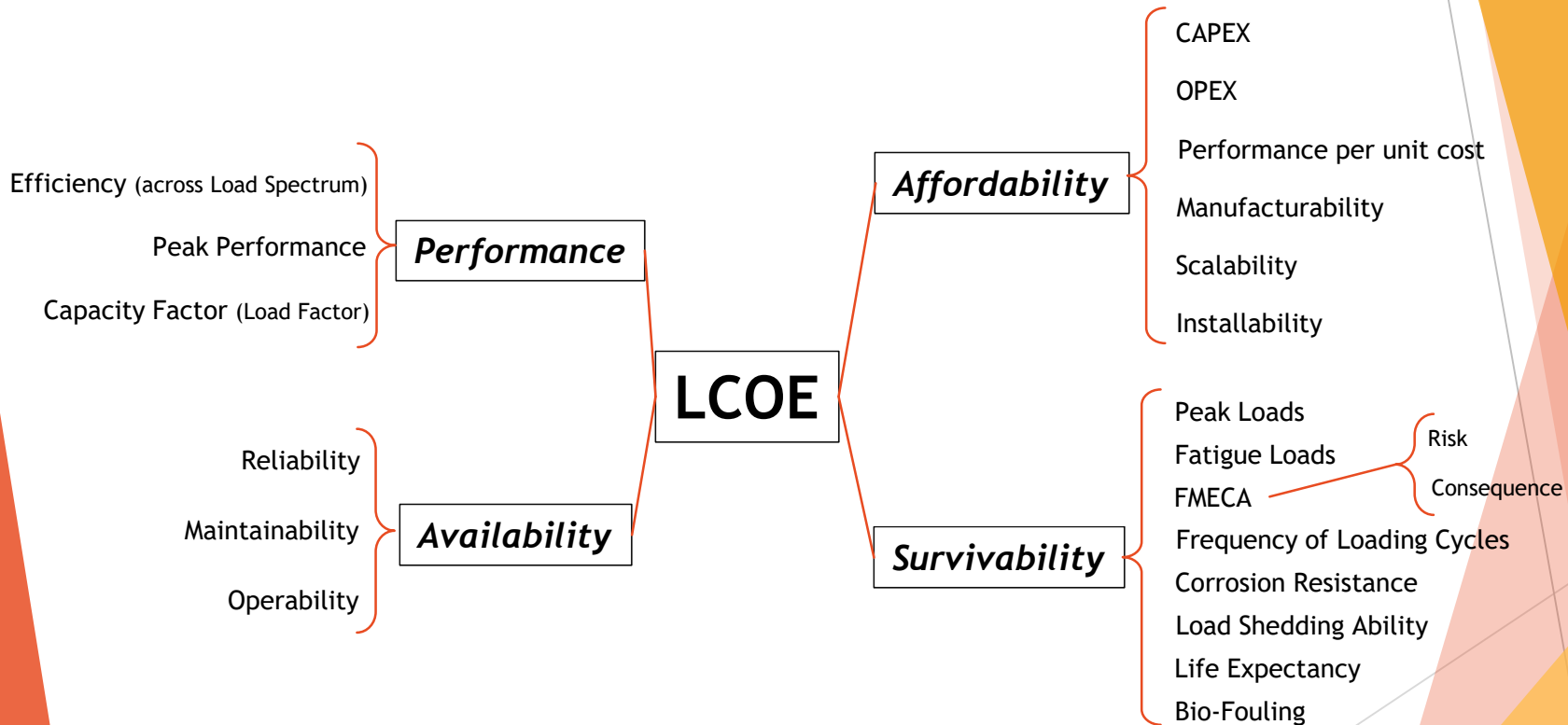
- ▶ Can design in passive flexibility which reduces loads on the device
- ▶ Excellent fatigue and lifetime



Gator

- ▶ Polymer based pumped water PTO
- ▶ Opportunity to submit Gator concept to Wave Energy Scotland Power Take Off Call
- ▶ IP sitting on shelf
- ▶ Potential Benefits
 - ▶ Seawater compatible
 - ▶ Does not require seals
 - ▶ 10's of millions of compression cycles
 - ▶ Fabricated at reasonable cost at all scales
 - ▶ Low maintenance requirements
 - ▶ Uses off the shelf hydropower components

Wave Energy Scotland very LCOE focussed



Exceedence

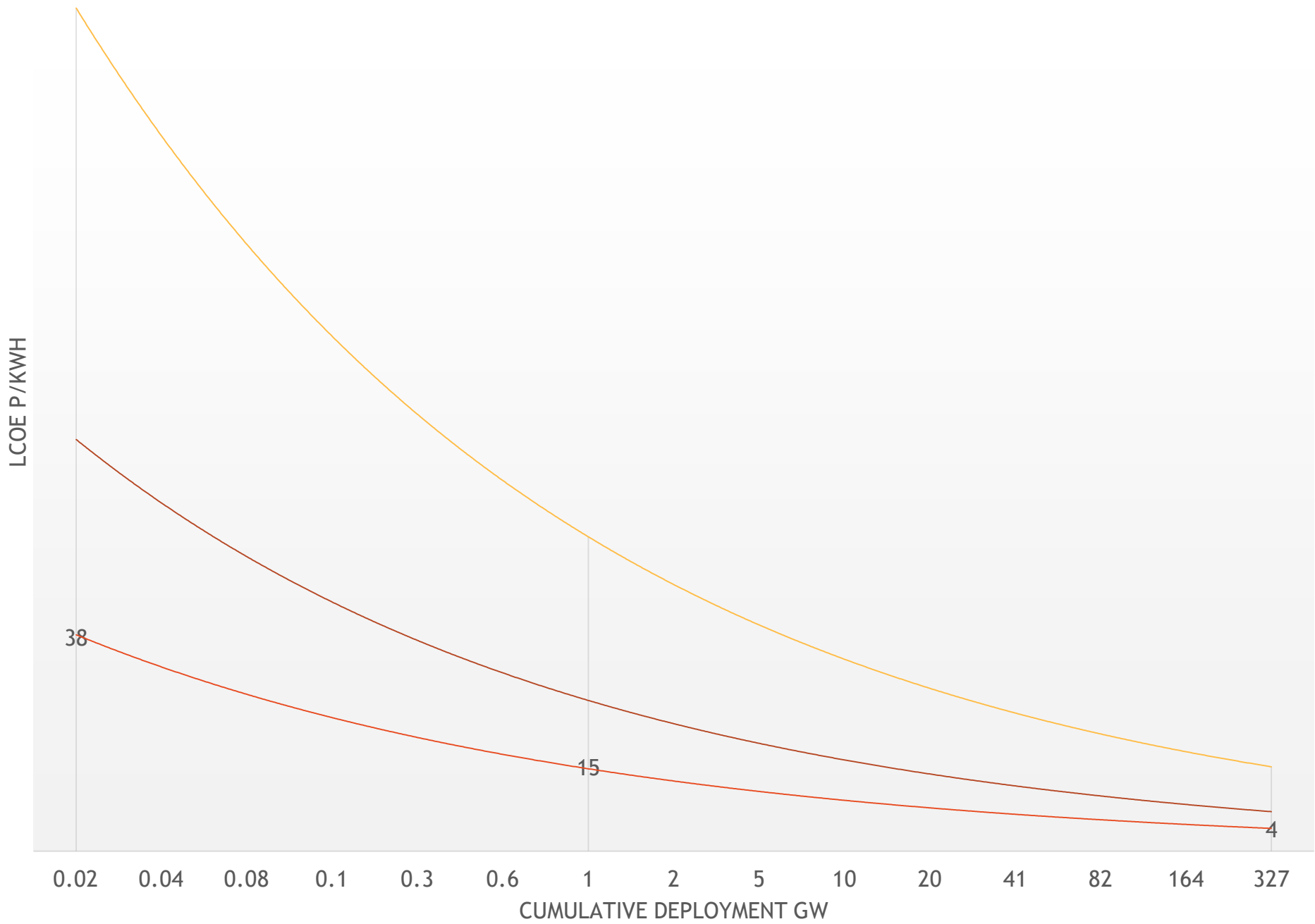
- ▶ TfiMarine needed help converting our benefits into real LCOE predictions
 - ▶ Needed a standard approach to doing this
 - ▶ Needed to see the unanswered questions
 - ▶ Needed a tool with substantial detail and power behind it
 - ▶ Needed a tool which could highlight the relevant importance of the different benefits
- ▶ Approached Exceedence who had the tool and the capabilities to do this
 - ▶ Helped us to form a project which matched WES requirements
 - ▶ Focussed on top down LCOE (take existing LCOE estimates for a device and change based on Gator)
 - ▶ Also asked them if they could manage the project

Gator

- a compliant seal free hydraulic PTO

- ▶ Funded by WES
- ▶ PTO project
- ▶ Stage 1 - TRL 1 - 3





Moving Forward

- ▶ Excellent learning experience for Tfi
- ▶ Strong LCOE results led to stage 2 approval for the Gator project
 - ▶ Bottom up LCOE estimates (detailed engineering to determine costs from bottom up)
- ▶ Tfi are looking to buy Exceedence finance
 - ▶ It's a tool which we will use more frequently across multiple projects
 - ▶ Helps quantify benefits at an early stage, focussing research & development efforts
- ▶ Further projects
 - ▶ Tfi have applied for additional WES projects with the Exceedence tool being a key part