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Sustainable Computing

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Agenda

- Sustainability and Sustainable Computing
- DSOD Framework
- Organizational Considerations

What is Sustainability?

- Many interpretations, including
  - "*improving the quality of human life while living within the carrying capacity of supporting eco-systems.*"
    - United Nations Environment Programme and International Union for Conservation of Nature
- Working definition: "Consuming resources at a slower pace than that with which they can be replenished."

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Sustainable Computing

- How can we deliver Compute Services in a sustainable fashion?
- How can we improve Sustainability through Compute Services?

The DSOD Framework

- Design
- Source
- Operate
- Dispose

Design

- Begin with Processes, not Systems
  - What is the end goal? What do you want to accomplish? How do you want to create value?
- Consider how to design the process for Sustainability
  - Eco-Efficiency considerations
  - Alternatives, Substitutions
    - Remote worker enablement
    - Virtual meetings
    - E-docs, E-workflow, E-*
- The design the supporting systems, holistically
  - Keeping entire lifecycle in mind

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Source

- Supply-Chain Effects
  - > Does the energy-efficient gear you're using get shipped around the world using jet-fuel and diesel to reach you?
  - > How much packaging gets injected into the waste stream?
  - > Embedded carbon: Peeling back the onion
  - > Procurement Processes
    - > Add positive scoring for sustainability: supply chain; certifications / labels; takeback programs; packaging; etc.

Operate

- All the eco-efficiency stuff we always talk about…

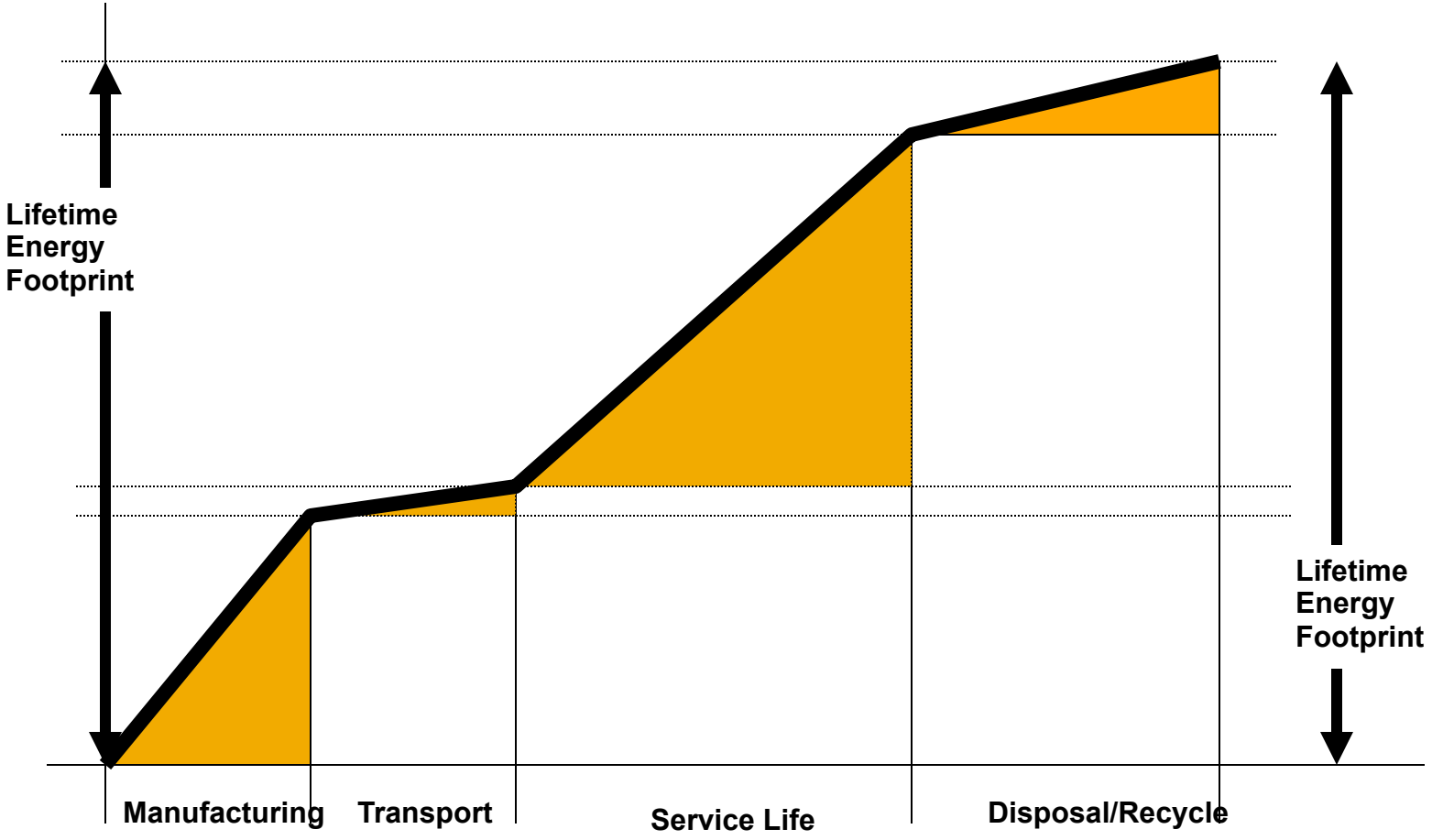
PLUS

- "Green" IT Service Management
  - > Provide sustainable options in Service Catalog and incentivize
- Going beyond the Data Center: Smart buildings via iBMS

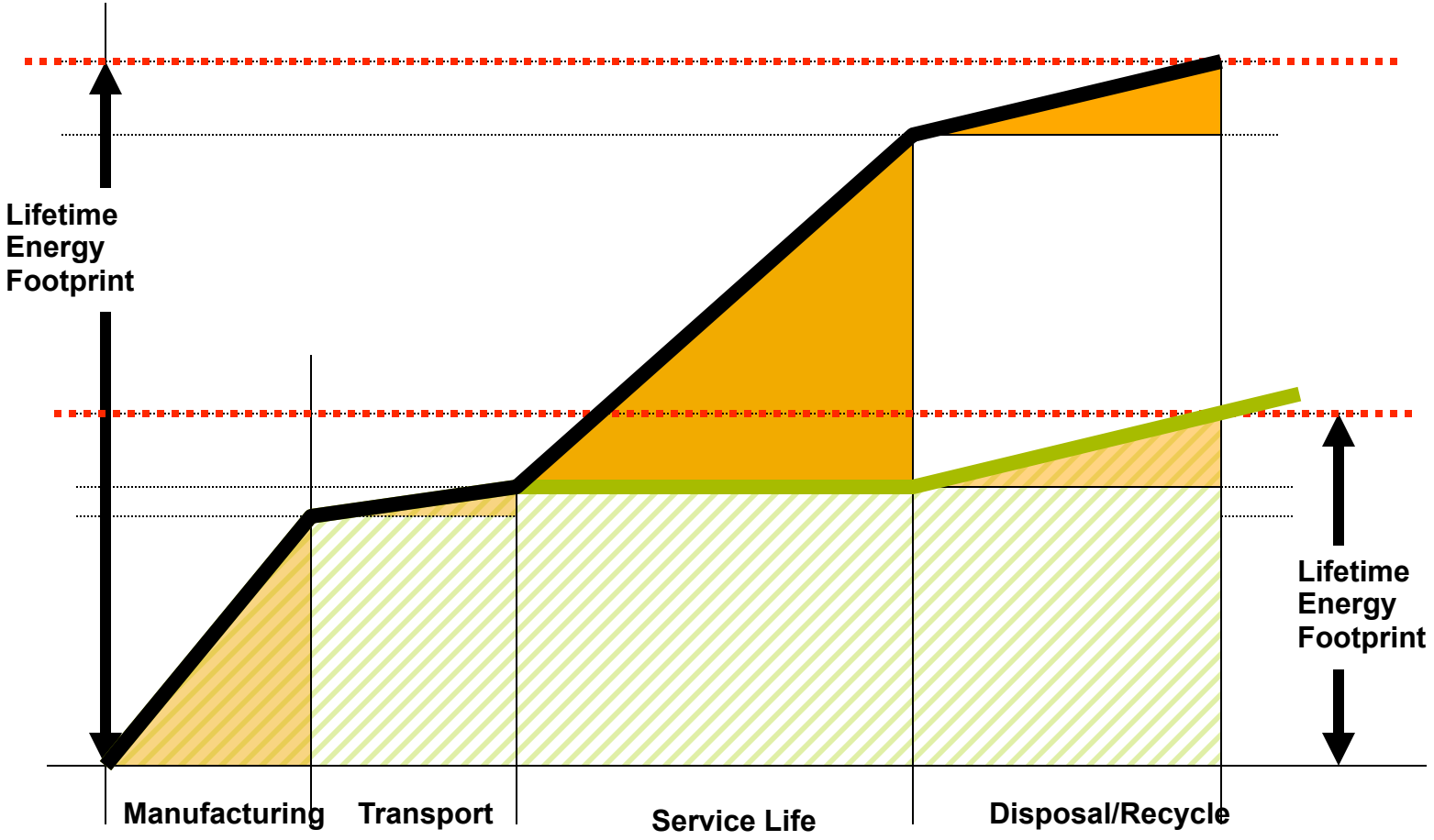
Dispose

- Reduce / Reuse / Recycle
  - Return to manufacturer
  - Repurpose within the organization
  - Sell or donate to other users
- Leverage operational by-products
  - Waste heat
  - Waste water
  - ???

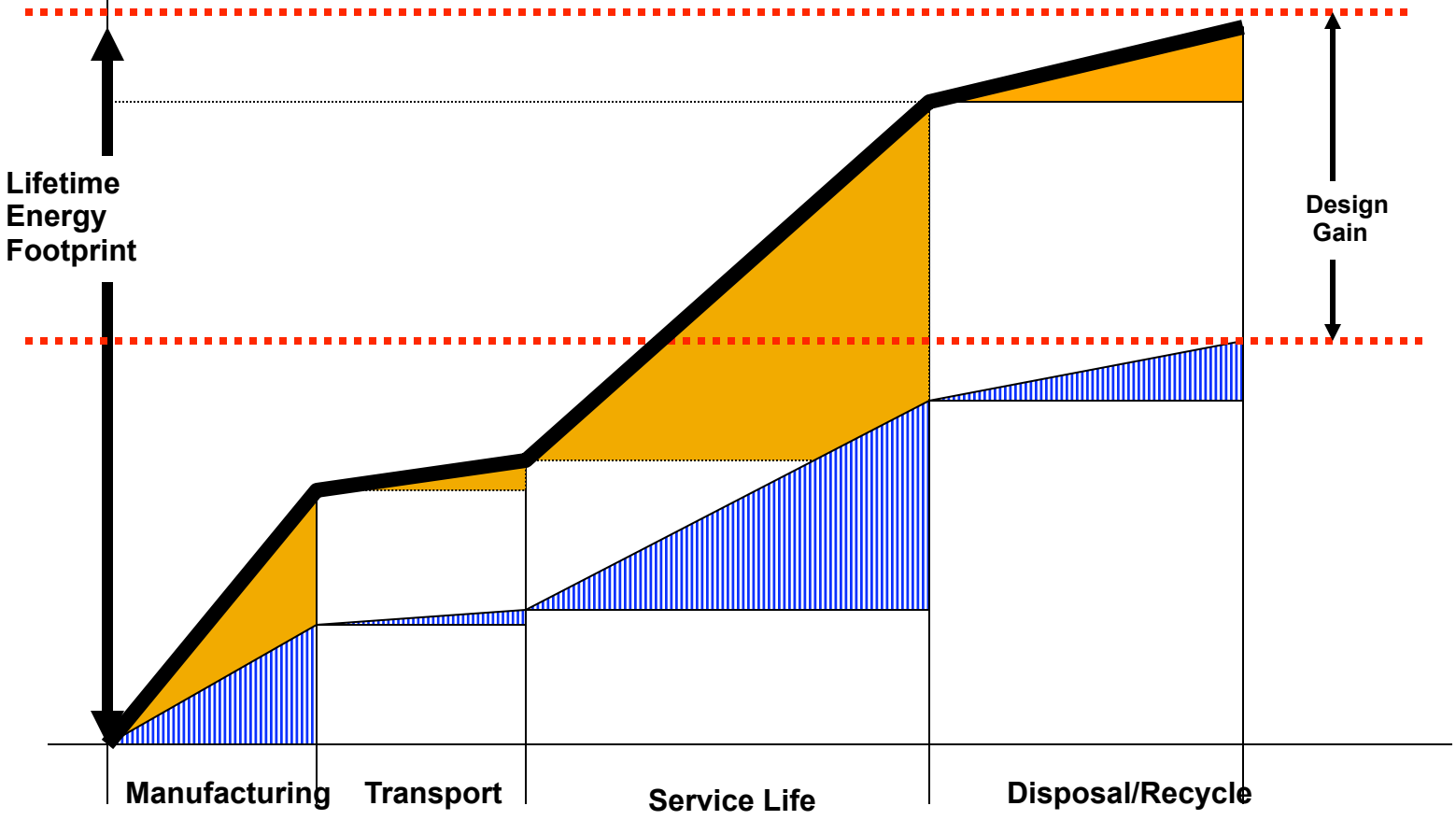
Lifecycle Energy Footprint



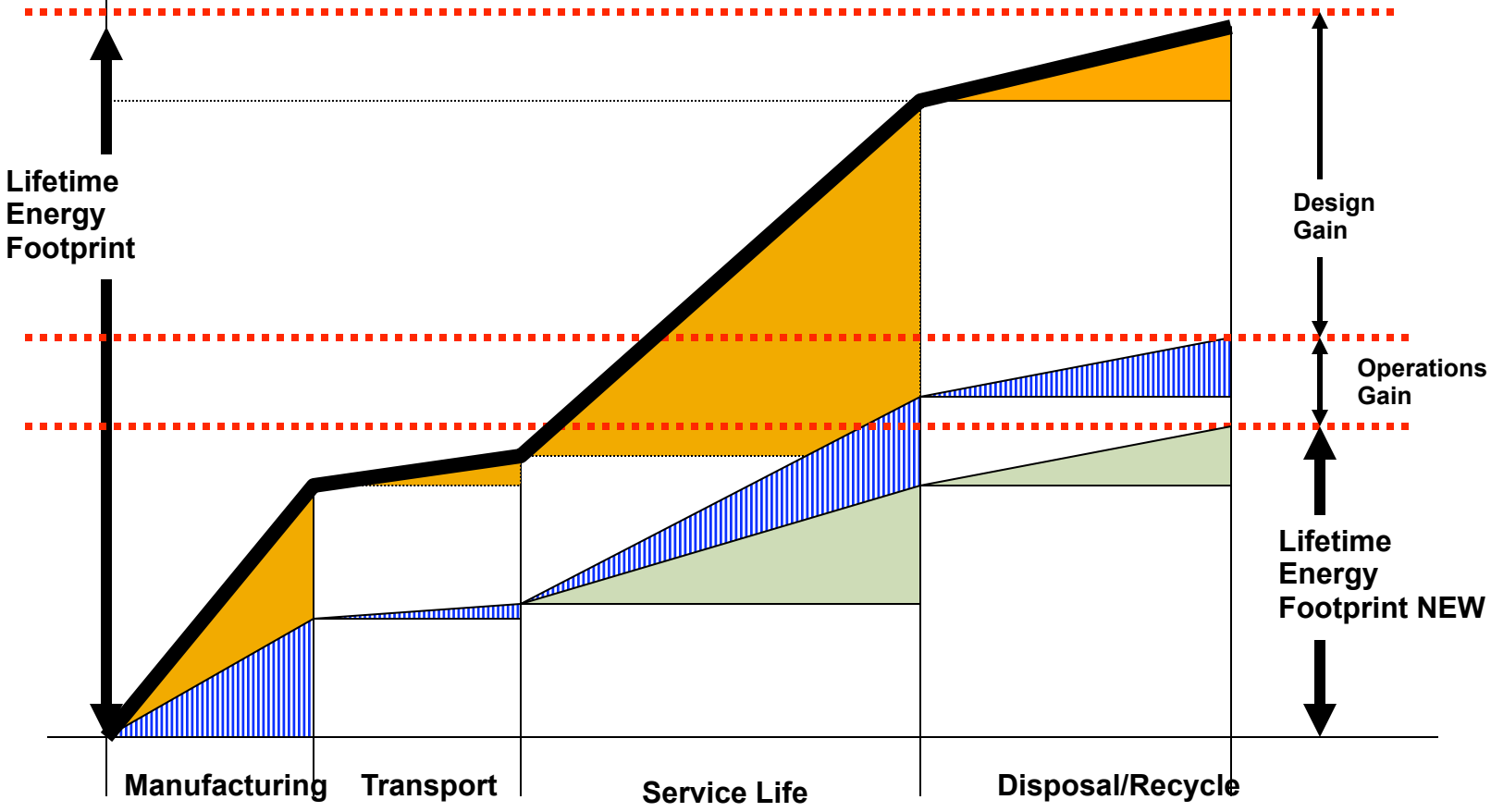
Impact of GHG Neutral Operations



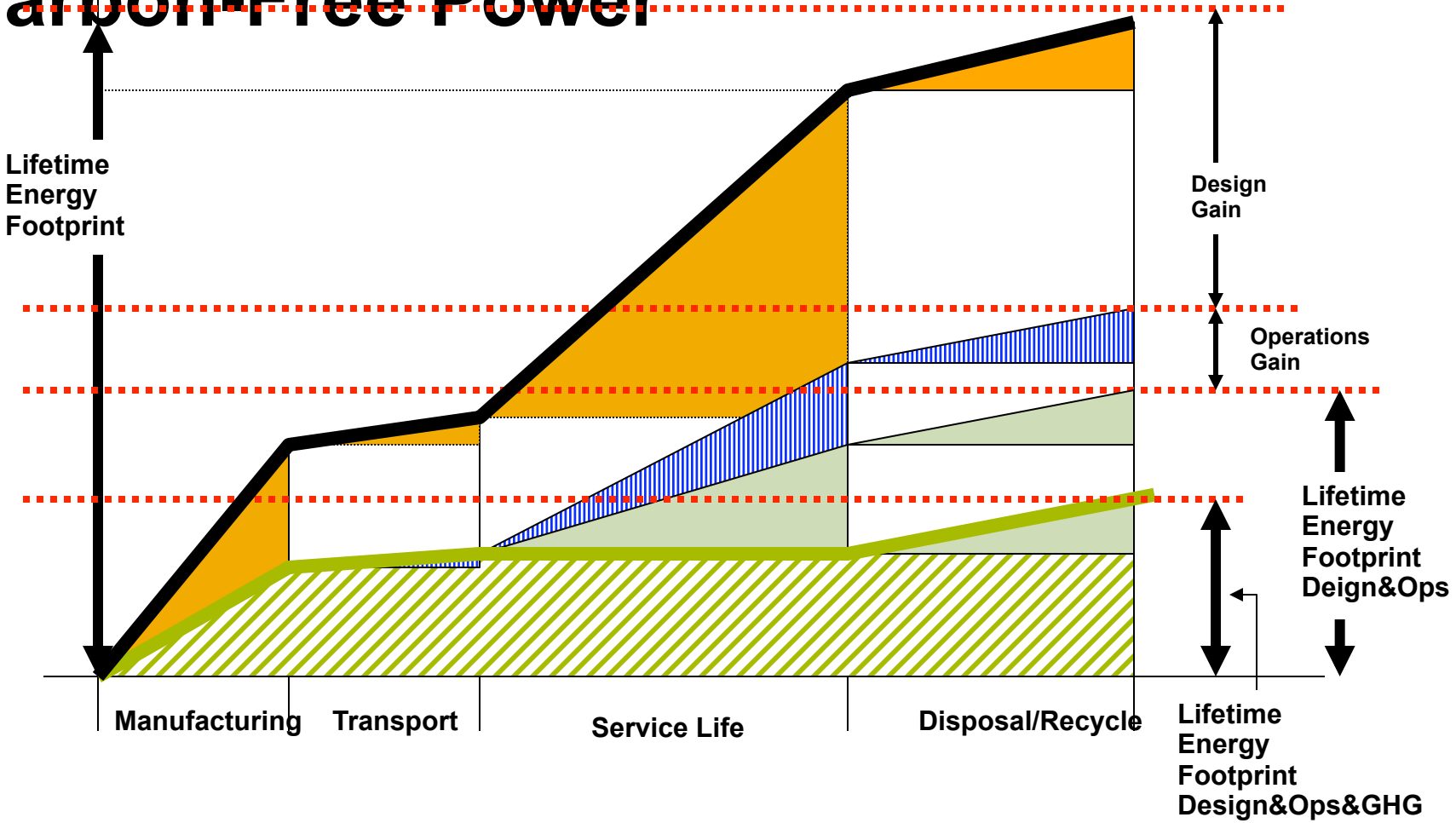
Impact of Design



Impact of Design & Operations



Impact of Design, Operations, & Carbon-Free Power



Organizational Considerations

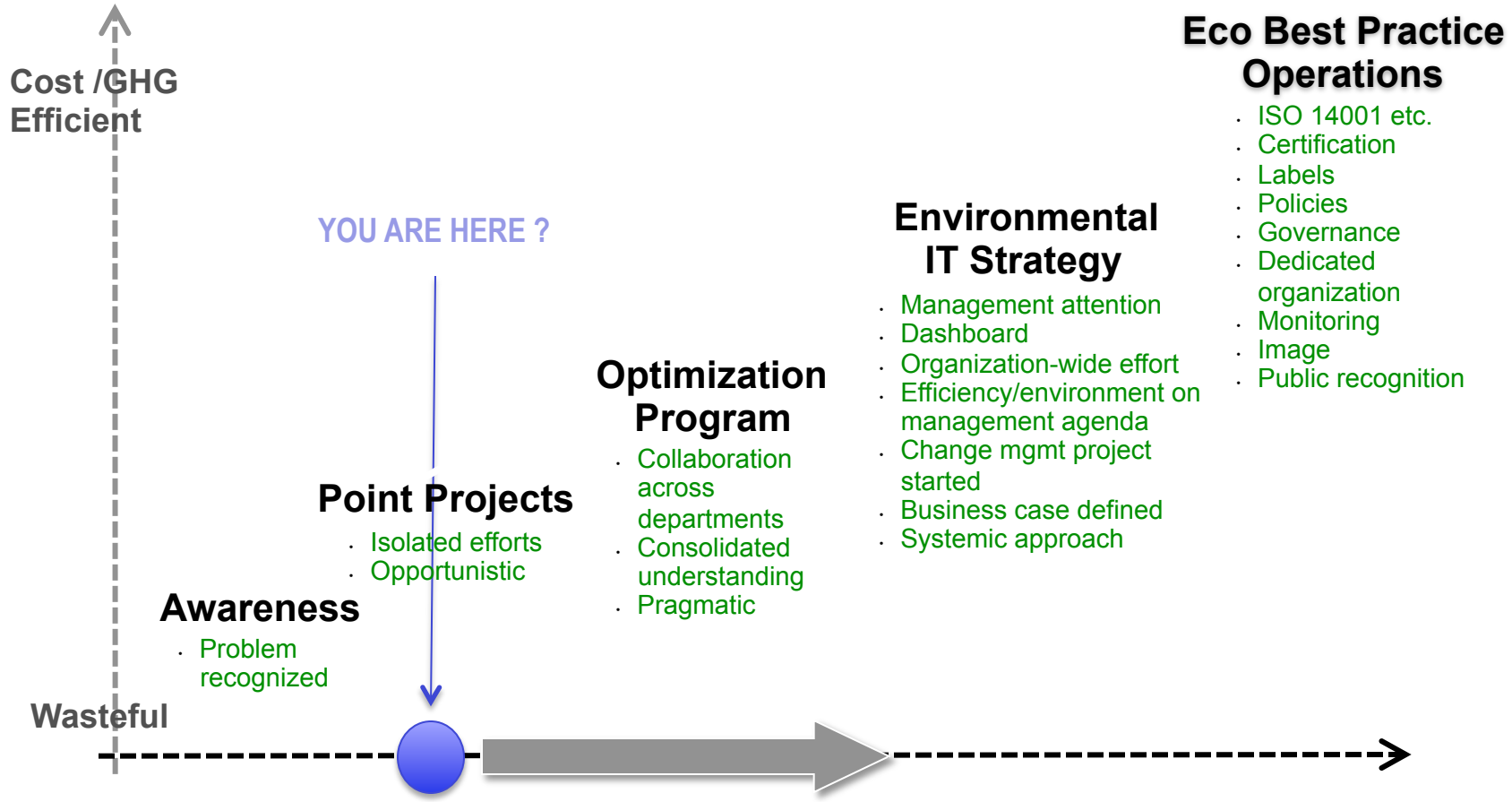
Cultural Change

- Creating Awareness
  - > Vision / Mission / Charter
  - > “What gets measured gets managed” – Peter Drucker
  - > Visibility
    - > Dashboards and Reporting Frameworks
- Creating a “Sustainability” culture
  - > Getting people to do the “right thing” as a matter of habit

Green Governance

- Cross-Functional Team
  - Charter
  - Authority
  - Budget

Eco Maturity



Conclusion

- Think beyond simple power and cooling issues
  - > Eco-System
- Look at the entire life cycle of your processes
  - > DSOD
- Change your culture
  - > Make sustainability habitual

Thank You!

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