

BCX RENEWABLE ENERGY BUSINESS DEVELOPMENT CURRICULUM

**A Brief Introduction To The
Development Process Of
Renewable Energy Projects**

**30-Minute Presentation For
The First Class Of Each Module**

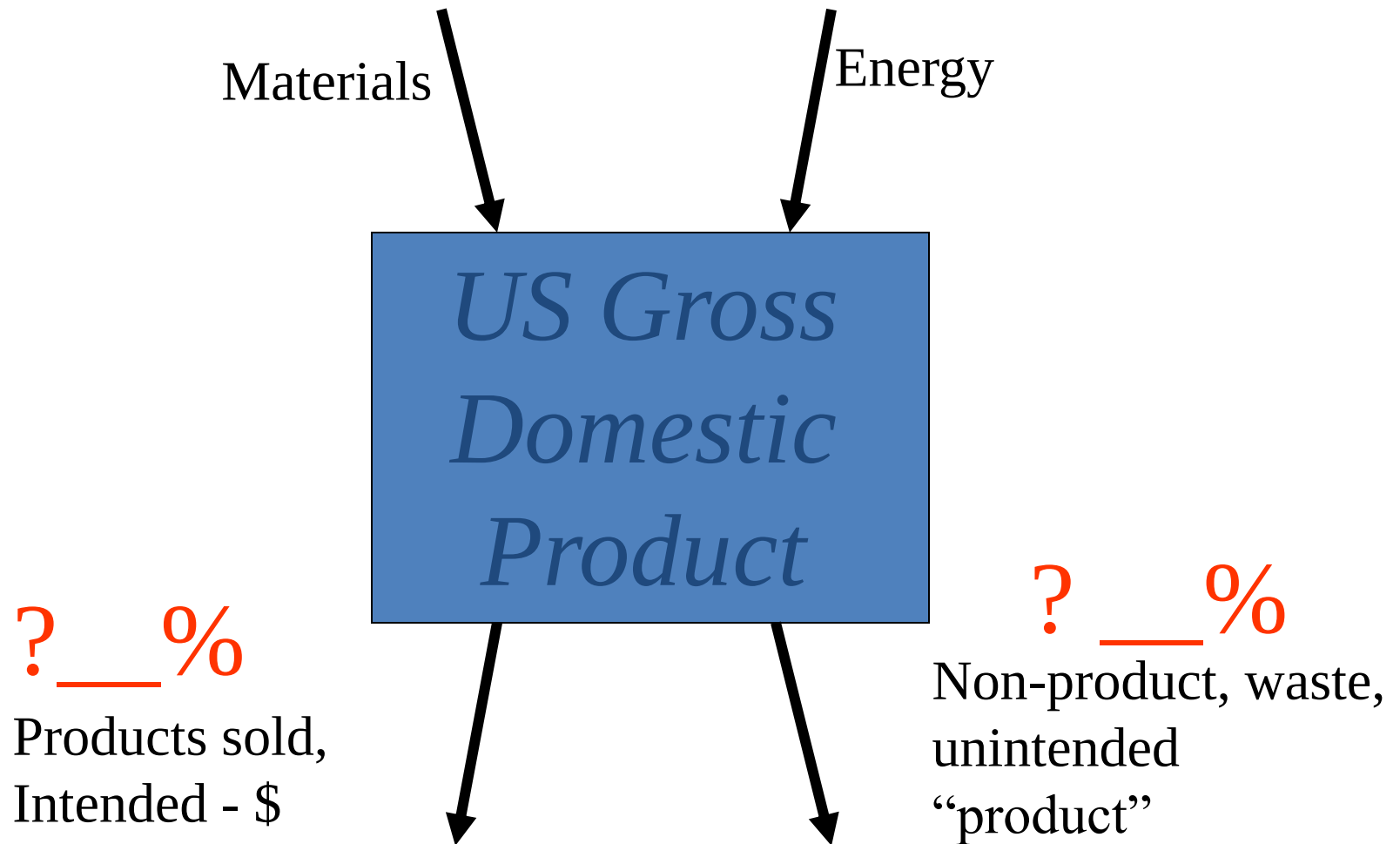
Biofuels Technologies and You

- Biofuels industry is new in New Mexico
- Not many jobs yet
- Entrepreneur? See if you are interested in starting your own
- Learn how to be a better employee in this new industry
- Where are local feedstocks you already know about?
- Where are local / regional markets for your biofuels product(s)?

Overview

- Here we'll give you an overview of the issues and opportunities that we'll cover in more detail at the end of this workshop.
- Be thinking about where there may be opportunities for YOU to start a profitable business in the biofuels industry, using the technology you're learning today.
- At the end, you'll be coming up with a sketch of a feasibility study for your idea.

What do YOU think?



Biofuels Feedstocks

- Feedstock = Raw material
 - Wild harvest
 - Crops
 - Wastes – feedstocks of the new clean economy
- 94% waste - finding value in wastes for biofuels
- More local / regional
- Transportation costs as limiting factor
- Small to medium sized scaled
- Scale of accumulation and handling of of feedstocks
- Biofuels as a higher-value product from wastes

Zero Waste Principles: 5 Kingdoms

- 5 Kingdoms of Nature:
 - Bacteria (Anaerobic/Aerobic)
 - Algae (Protista) e.g. Spirulina
 - Plants (coevolved with fungi)
 - Fungi
 - Animals (many coevolved with bacteria)
- *Or many ways we make things – industrial / uses*

Four Design Principles

- 1st: No kingdom eats its own waste.
 - Toxin
 - Degenerative (e.g. mad cow disease)
 - *Industrial/uses: Each industry/use has its own wastes*
- 2nd: Whatever is a toxin for one kingdom will be neutral or a nutrient for another species in at least one other kingdom.
 - *Industrial/uses: another industry/use can use/find value in the wastes from the others.*

Four Design Principles

- 3rd: Systems are more efficient and more resilient, the more diverse and the more local they are operating.
 - *Industry/uses: the more diverse and the more local the business are, the more likely our economy is efficient and resilient.*
- 4th: When all 5 kingdoms cooperate, everything can be integrated and separated at ambient pressure and temperature.
 - *Industry/uses: The solutions are often less energy-dependent (cost) than we may initially see.*

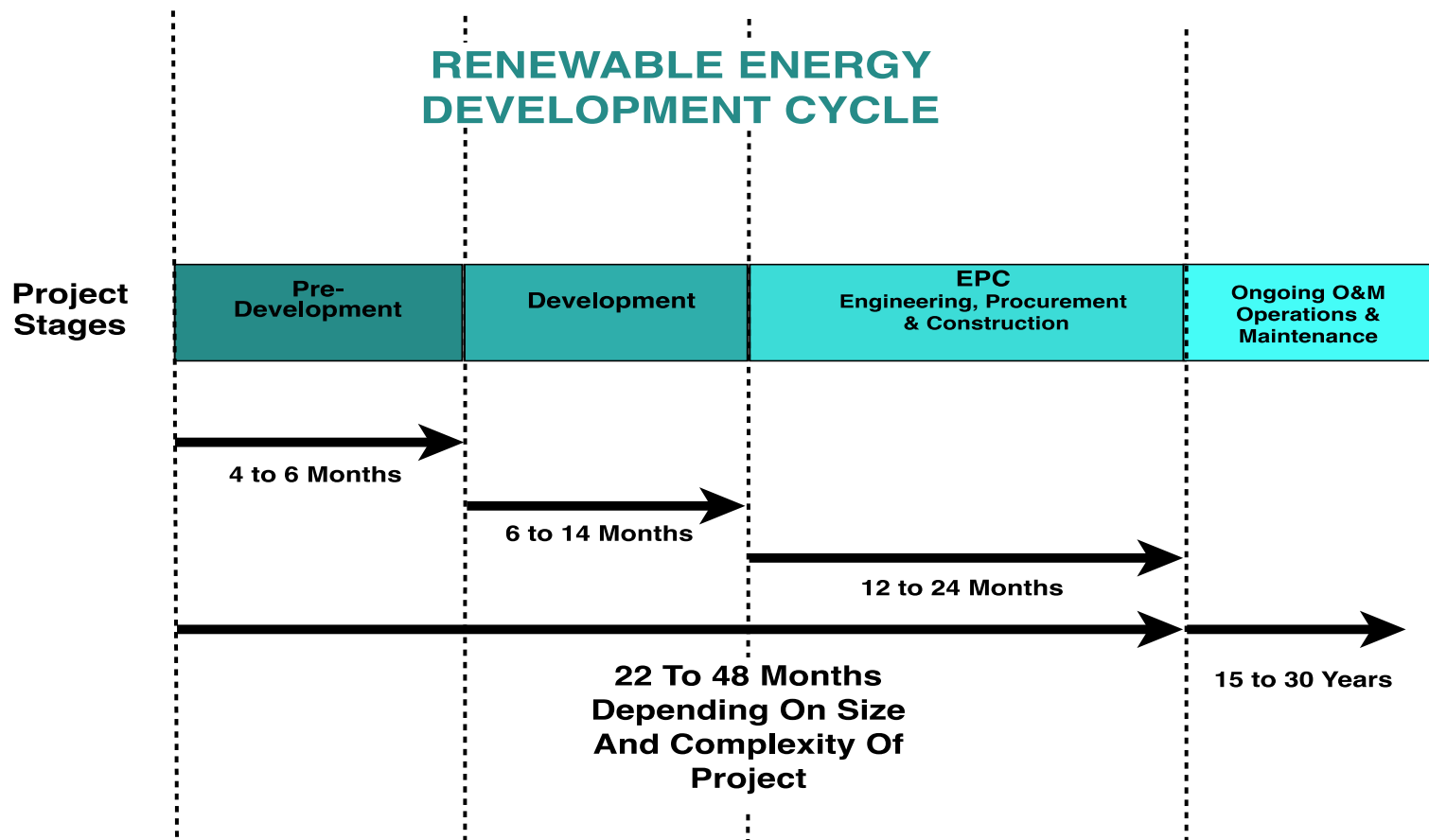
LESSON OVERVIEW

RENEWABLE ENERGY PROJECT DEVELOPMENT

- I. THE FOUR STAGES OF THE PROJECT DEVELOPMENT CYCLE
- I. THE SIX ESSENTIAL PROJECT ELEMENTS
- I. THE THREE PROJECT DEVELOPMENT MASTER DOCUMENTS

I. THE PROJECT DEVELOPMENT CYCLE

- The Pre-Development Stage (Project Conceptualization, Initial Research, Initial Fundraising)
- The Development Stage (Deep Research, Business Planning, Major Fund Raising)
- The EPG Stage (Engineering, Procurement, Construction)
- The O&M Stage (Operations & Maintenance)



II. THE SIX ESSENTIAL PROJECT ELEMENTS

Team

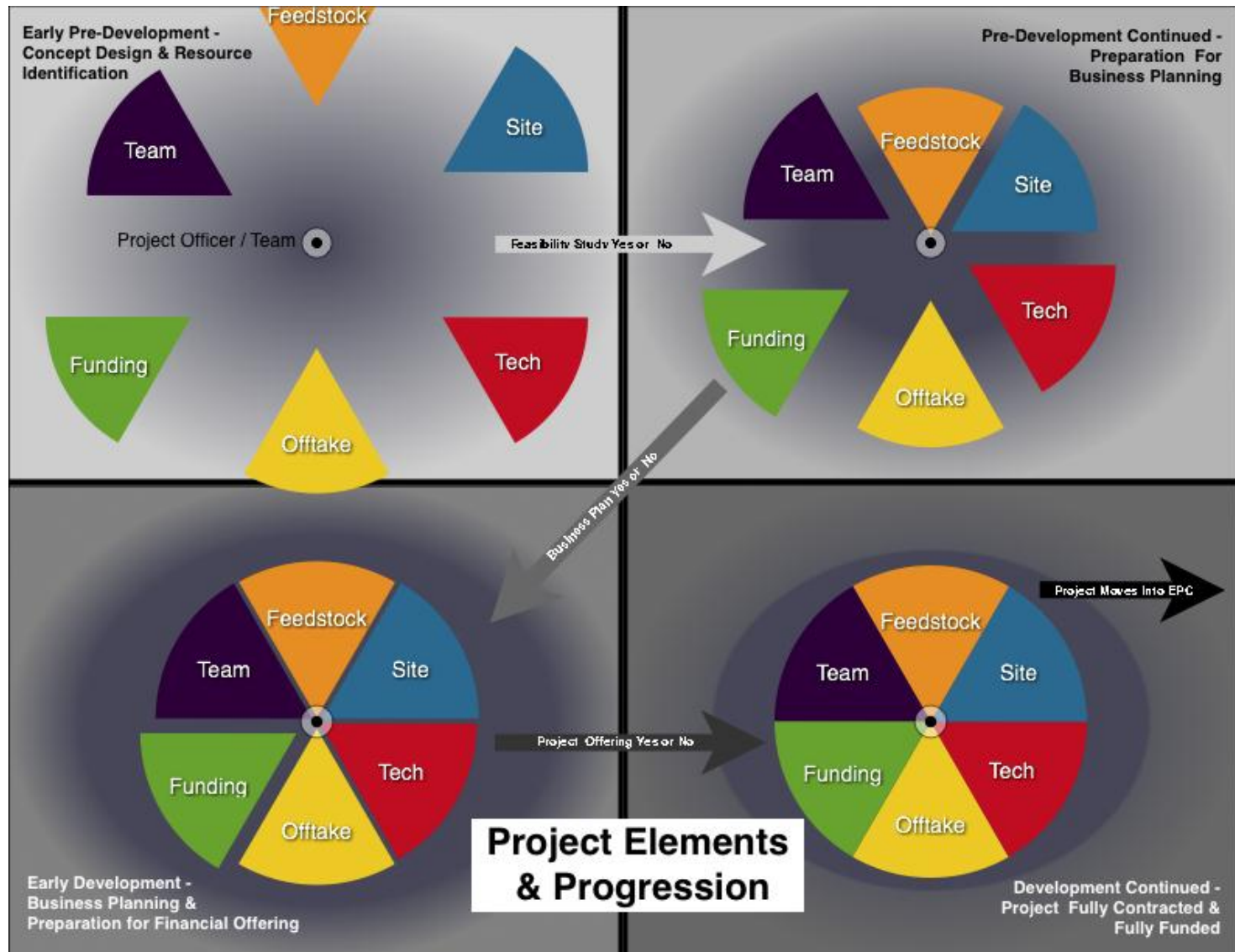
Feedstocks

Technology

Offtake/Market

Site

Funding



II. THE SIX ESSENTIAL PROJECT ELEMENTS

- Team - The Group Of People That Together Develop A Renewable Energy Project
- Feedstocks - The Primary Materials Used As Fuel Or Inputs In A Project (Wood, Waste Materials, Etc.)
- Technology - The Technology And Processes Used To Transform The Feedstocks Into Energy Products (Liquid Fuels, Electricity, Solid Fuels, Etc.)
- Offtake/Market - The Buyer(s) Of The Products Produced (Includes The Idea Of A Single Contract For The Product Such As A Power Purchase Agreement (PPA) For Electricity
- Site – The location of the facility.
- Funding – The money used to develop the project from its earliest inception all the way through to the facility's construction and commissioning

III. THE PROJECT DEVELOPMENT MASTER DOCUMENTS

Three master documents that a project team writes during the project development cycle are:

- A Project Feasibility Study
- A Project Business Plan
- A Project Financial Offering

Each document is a tool used to raise money needed to move the project to the next stage of development.

Class Activity: Introductory Discussion

- What are some of the feedstocks we know about locally?
- What might be some of the opportunities to sell our product(s) locally?
- Watch for business opportunities that you see during the workshop. Pick one.
- You'll be asked to *sketch out* a Feasibility Study for *your business idea* at the end of the workshop.

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