Developing & Financing Renewable Energy Projects in Indian Country

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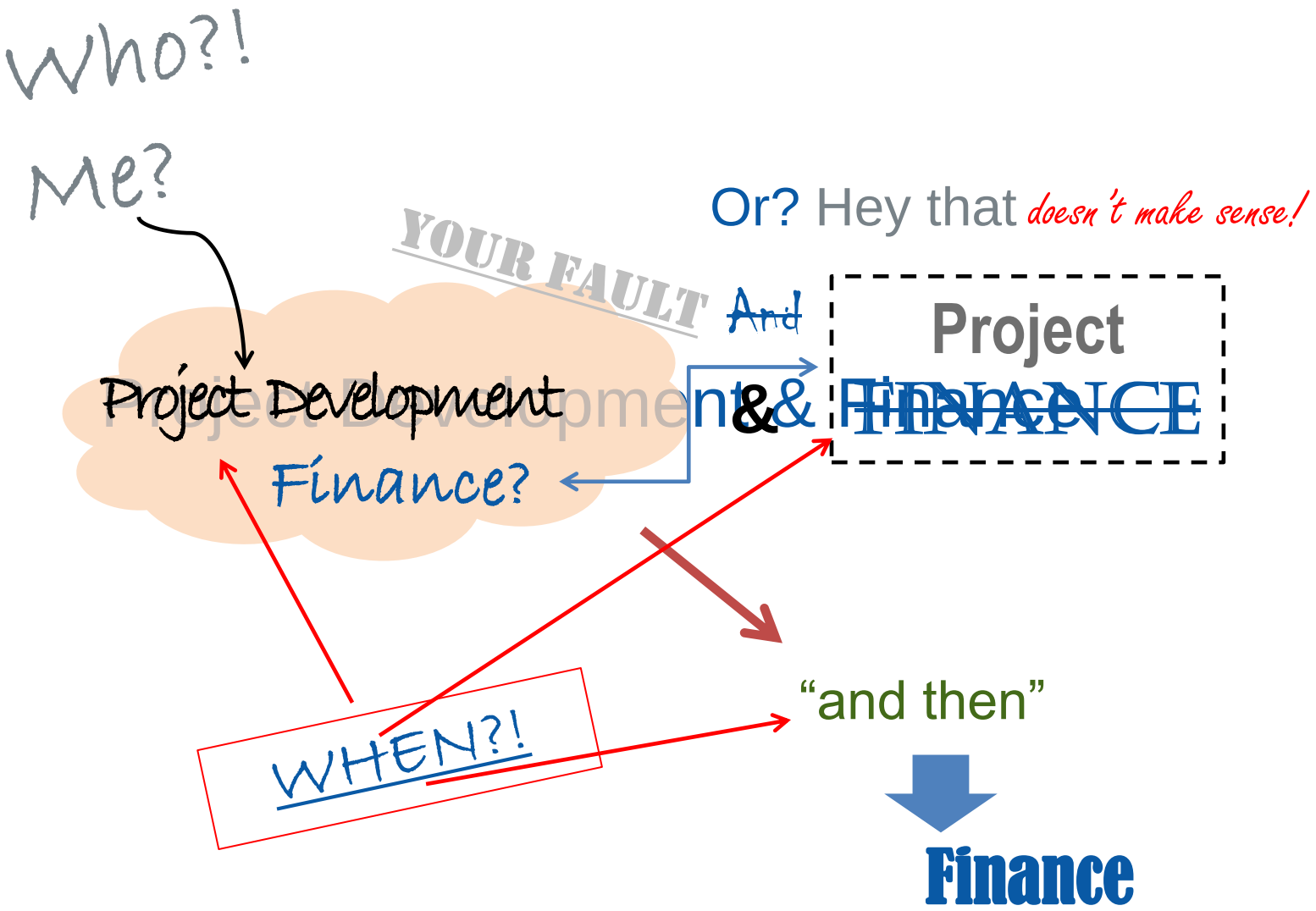
Context

Technically, Indian lands have enough renewable energy resource to produce:

- 1 billion megawatt-hours (MWh) of wind (about 148,000 homes)
- 7 billion MWh of solar photovoltaics (PV)
- 4 trillion MWh of biomass

There are a number of barriers constraining this potential including:

- *Infrastructure and transmission;*
- *Project development capacity;*
- *Project financing options;*
- *Permitting barriers;*
- *Expertise;*
- *Other*


Who?!
Me?
YOUR FAULT
Or? Hey that doesn't make sense!
Project Development
Finance?
And
&
Project
Finance
WHEN?!
"and then"
Finance

Key Concepts

- ***Project Context & Motivation***
  - What is your interest in the project (e.g. revenue, self-reliance)?
  - What are the basics of your energy environment (e.g. utility relationship, governance structure, energy sources and costs, key decision makers)?
- ***Project Development Discipline***
  - How will this work and how long will it take?
  - What are the stage gates for moving projects forward?

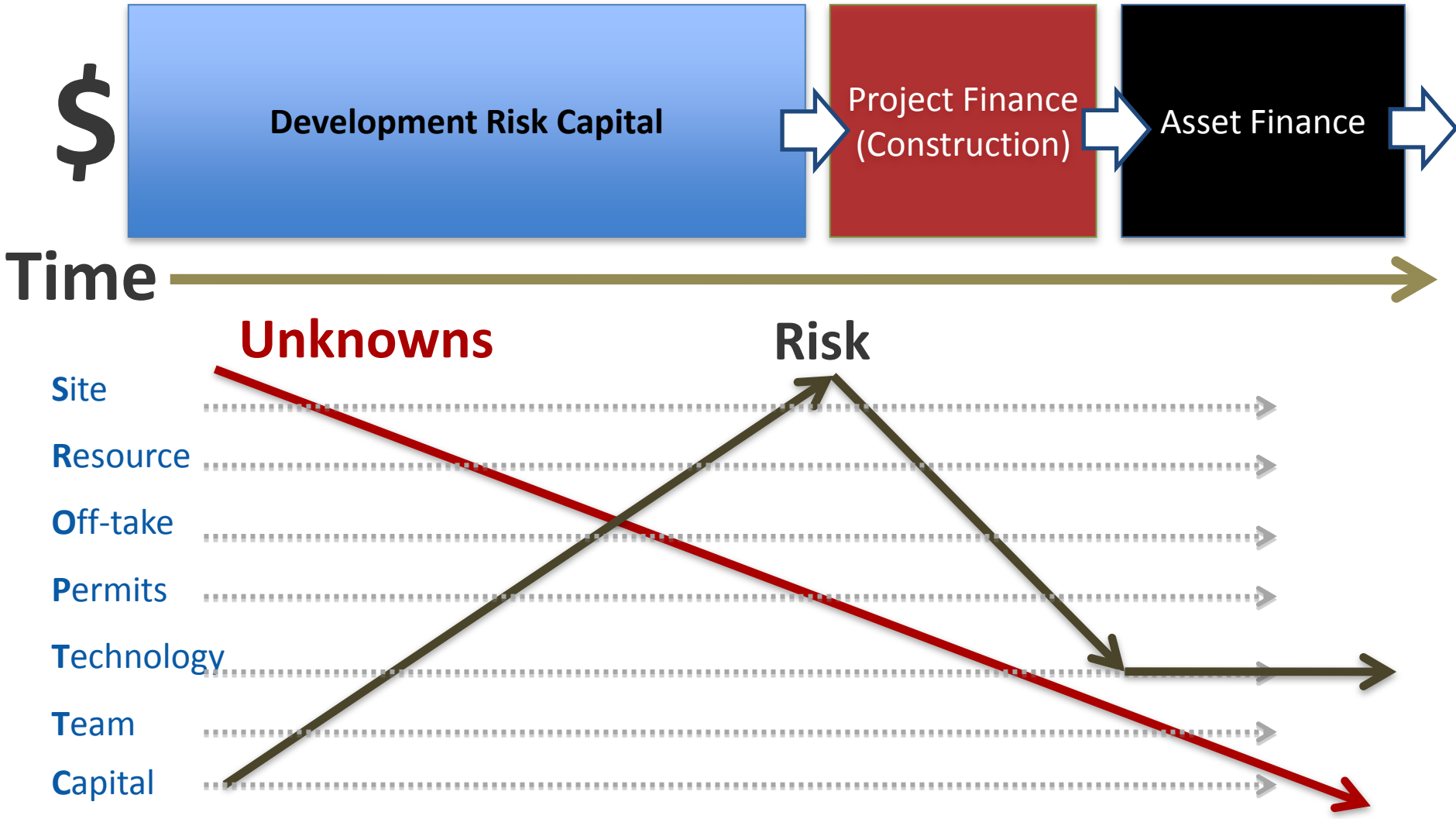
Bankability

- Process discipline essential to organize and advance a viable project.
- Bankable projects will attract capital and different financing options.

Motivation: Two Paths

Cost Avoidance	Business Venture
Community Project	**Commercial Project**
Value proposition • Save money • Reduce electricity costs • Energy independence Success Measurement • Cost avoidance Market Indicator • Retail electricity price Decision Discipline • Capital budgeting	Value proposition • Sell electricity for money Success Measurement • Levelized cost of energy Market Indicator • Wholesale electricity prices, demand Decision Discipline • Investment/business decision

Project Development Framework



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Project Development Framework

Site	Resource	Off-Take	Permits	Technology	Team	Capital
No Site, No Project	**Engineering Assessment**	**Off-take Contract – (Revenue)**	**Anything that can stop a project if not in place…**	**Engineered System**	**Professional, Experienced, Diverse**	**Financing Structure**
• Site control • Size and shape • Location to load and T&D • Long-term control • Financial control • Clear title • Lease terms • Collateral concerns • Environmental • Access • O&M access • Upgradable	• Volume/ Frequency • Variability • Characteristics (power/speed) • 24-hour profile • Monthly, seasonal and annual variability • Weather dependence • Data history • Std. Deviation • Technology suitability	• Credit of counterparty • Length of contract • Terms and conditions • Reps and warranties • Assignment • Curtailment • Interconnection • Performance • Enforcement • Take or pay • Pricing and terms	• Permitting/ entitlements • Land disturbance • Environmental • Cultural impacts • Resource assessments • Wildlife impacts • Habitat • NEPA, EIS • Utility inter-connection • Other utility or PUC approvals	• Engineering design plans • Construction plans • Not generic solar panel and inverter • Engineered resource/ conversion technology/ balance of system designs • Specifications • Bid set	• Business management • Technical expertise • Legal expertise • Financial expertise • Utility interconnection expertise • Construction/ contract management • Operations • Power marketing/ sales	• Development equity • Project equity • Project debt • Mezzanine or bridge facility • Tax equity • Grants, rebates, other incentives • Environmental attribute sales contracts (RECs) • Bond finance • Non-recourse project finance

CONTINUOUS, ITERATIVE, PROCESS

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Renewable Project Finance

- ***Economics are Dependent on Tax Equity/Other Policy***
  - Governments/non-profits have no tax appetite
  - Utilities may value Renewable Energy Credits (REC) to satisfy legal requirements
  - 3rd party finance is the solution
- ***Key Contract: Power Purchase Agreement (PPA)***
  - A long term, financeable commitment to buy project output – in kWh's and/or attributes (like RECs)
  - Allows developer to monetize tax or other policies

➢ Several common financing structures and financing sources are used by the renewable energy industry to finance a PPA

	Project Debt			Tax Equity		Lease Equity	DOE
	Bank	Private Bond	Term Loan	Levered	Unlevered		
Investor Universe	Commercial Banks	Private or 144A Offering	Institutional investors w/energy focus	Financial investors and some corps. with tax appetite.		Lease equity market, institutional	DOE supports 100% or 80%
Target Rating	"Investment Grade" no rating needed	BBB-/NAIC 2	B is doable; BB is preferred	NA (Investment Grade Off-taker)		NA (Investment Grade Off-taker)	NA
Market Capacity	Up to $1 Billion; up to 1.0XDSCR in Low Case	+$1.0 Billion	$750 Million	Sized to target IRR		Sized to 20-49% of Capital Stack	No Limit
Indicative Pricing	L+250-350 2007: 100-150 +fees 1.5-2.0%	7% Area; T + 5%-6% Fixed	L+250-500; 425 - 450 Libor floor;	11-13.5; IRR by Flip	9-10.5% IRR by Flip	9.0-12.5% after tax yield	T+75-100 bps
Tenor	5-7 years typical, up to 15	Term of PPA (20-25); Prepayment Penalty	Up to 7 years	Target IRR reached by year 10 with PTC; 6-7 with ITC		80% of Useful Life	Up to 30 years
Sizing Profile	DSCR Requirements 1.30-1.40X; lockbox; PPA 'Tail'; EPC with credit support; LIBOR Swaps; Reserves		1% amortization with cash sweep	Downside flip dates: +3 years in downside; +6 years in severe downside		1.30-1.40 "RSCR" Like Project Debt	Driven by required Ratings

Tax Equity Financing Structures

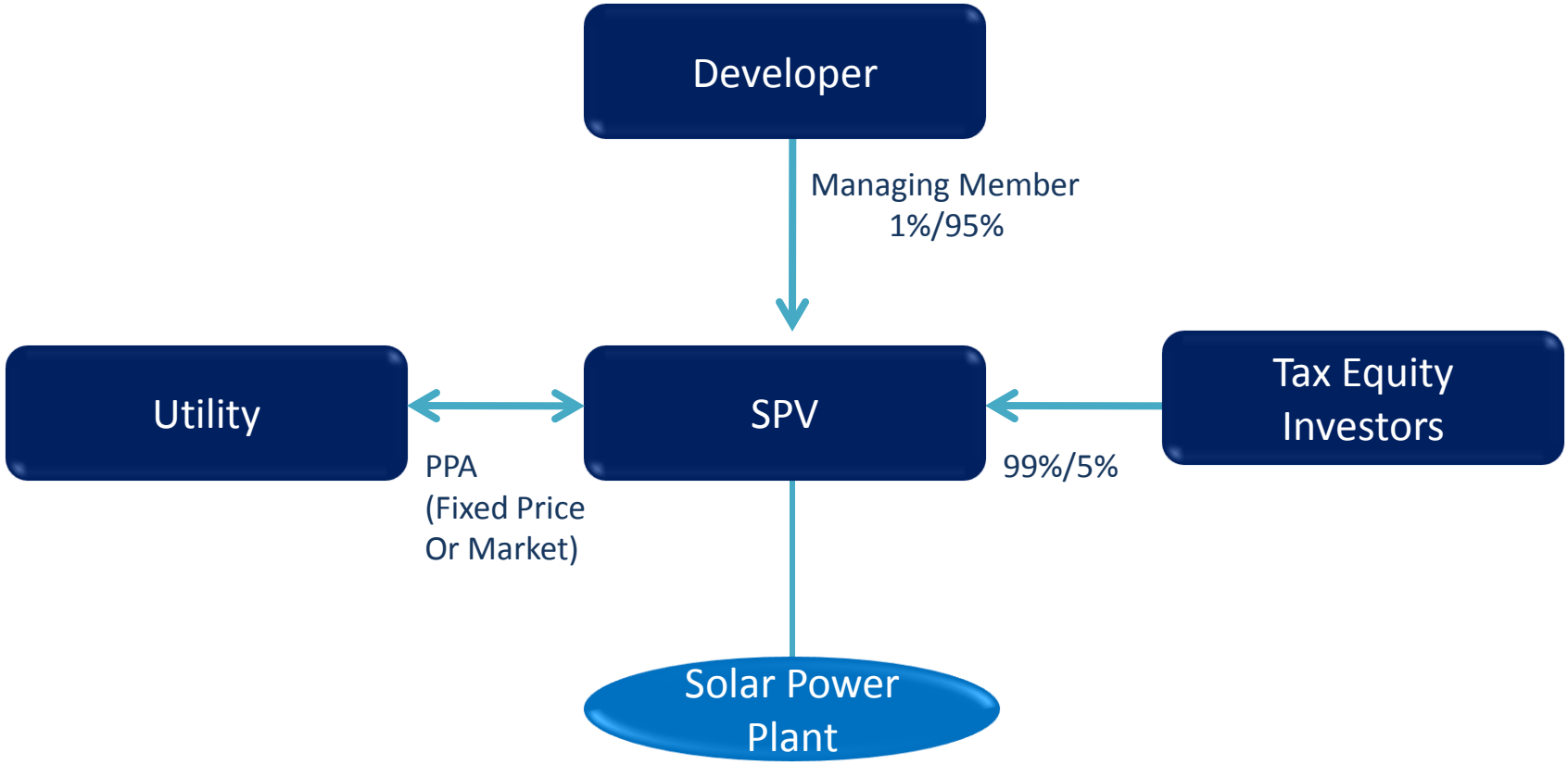
Options	How Tax Equity Return is Earned
Partnership Flip	Tax equity invests capital to achieve target IRR. Upon achievement to target internal rate of return (IRR) ownership interest automatically "flips" down to contract percentage.
Sale Leaseback	Tax equity buys project and leases it back to developer for a term of years.
Inverted Lease	Tax equity invests capital for a preferred return that includes a "pass through" of credit by operation of tax election.

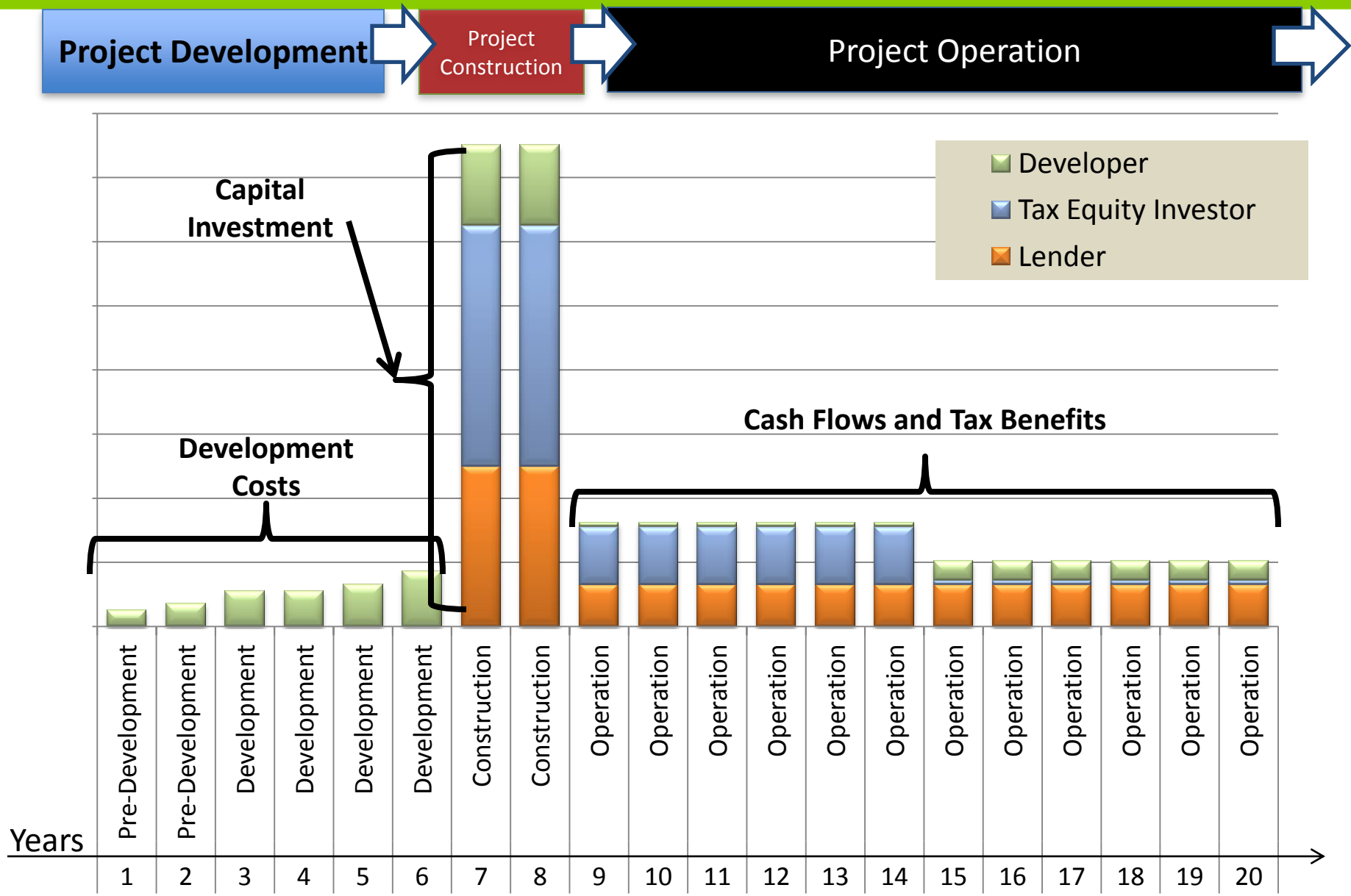
Capital/Cash Flows and Deal Structuring

- ***Partnership Flip Example – Anatomy of a Deal***
  - An illustration of participants' roles in a partnership flip transaction
  - A PPA is assumed to be in place – for kWh sales and/or REC sales
  - We will visualize the cash flows for each participant

- ***Key Contract: PPA***
  - A long term, financeable commitment to buy project output – in kWh's and/or attributes (like RECs)
  - Allows developer to monetize tax or other policies

Partnership Flip Structure





Partnership Flip Illustration

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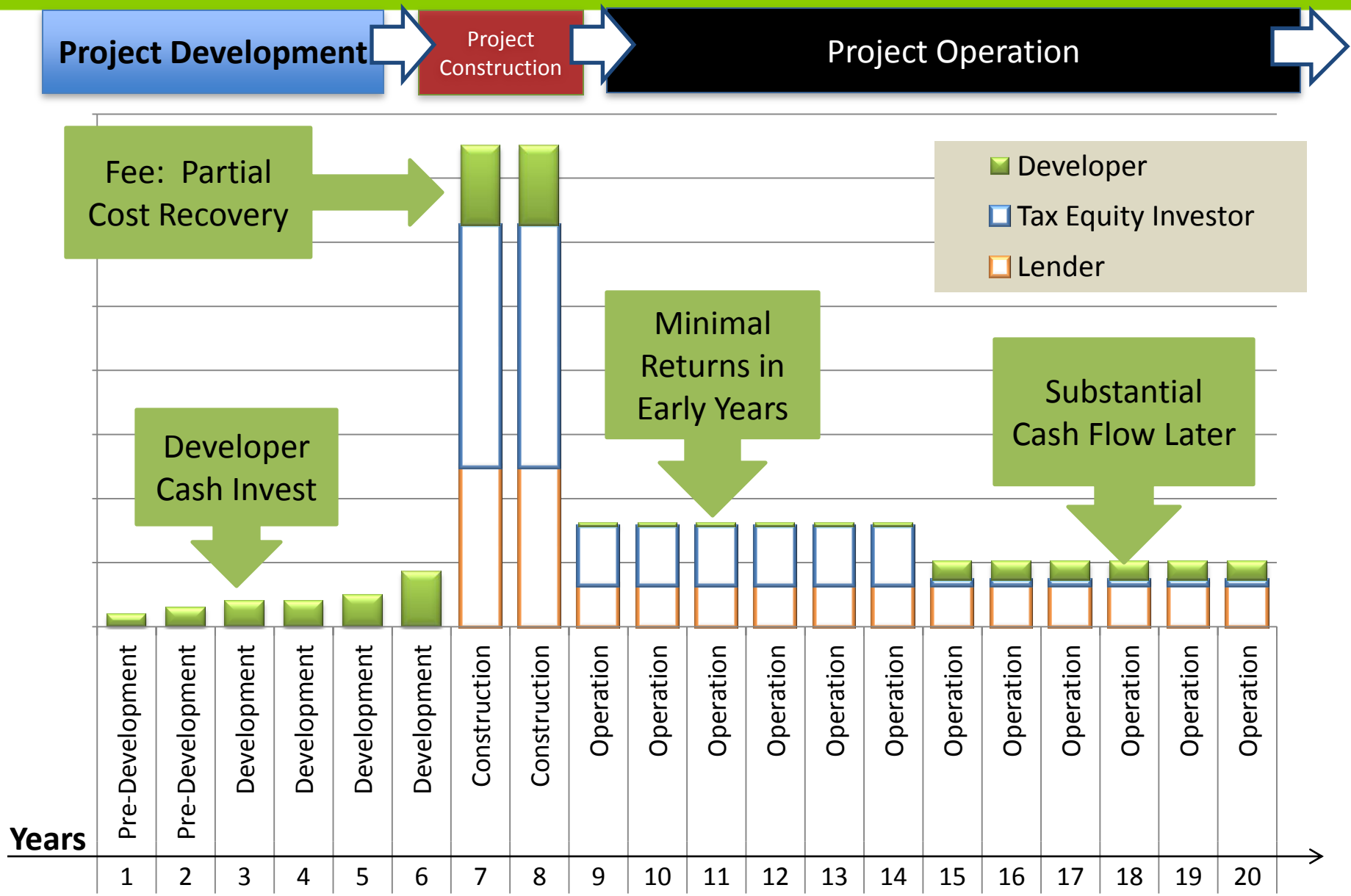

Partnership Flip Illustration

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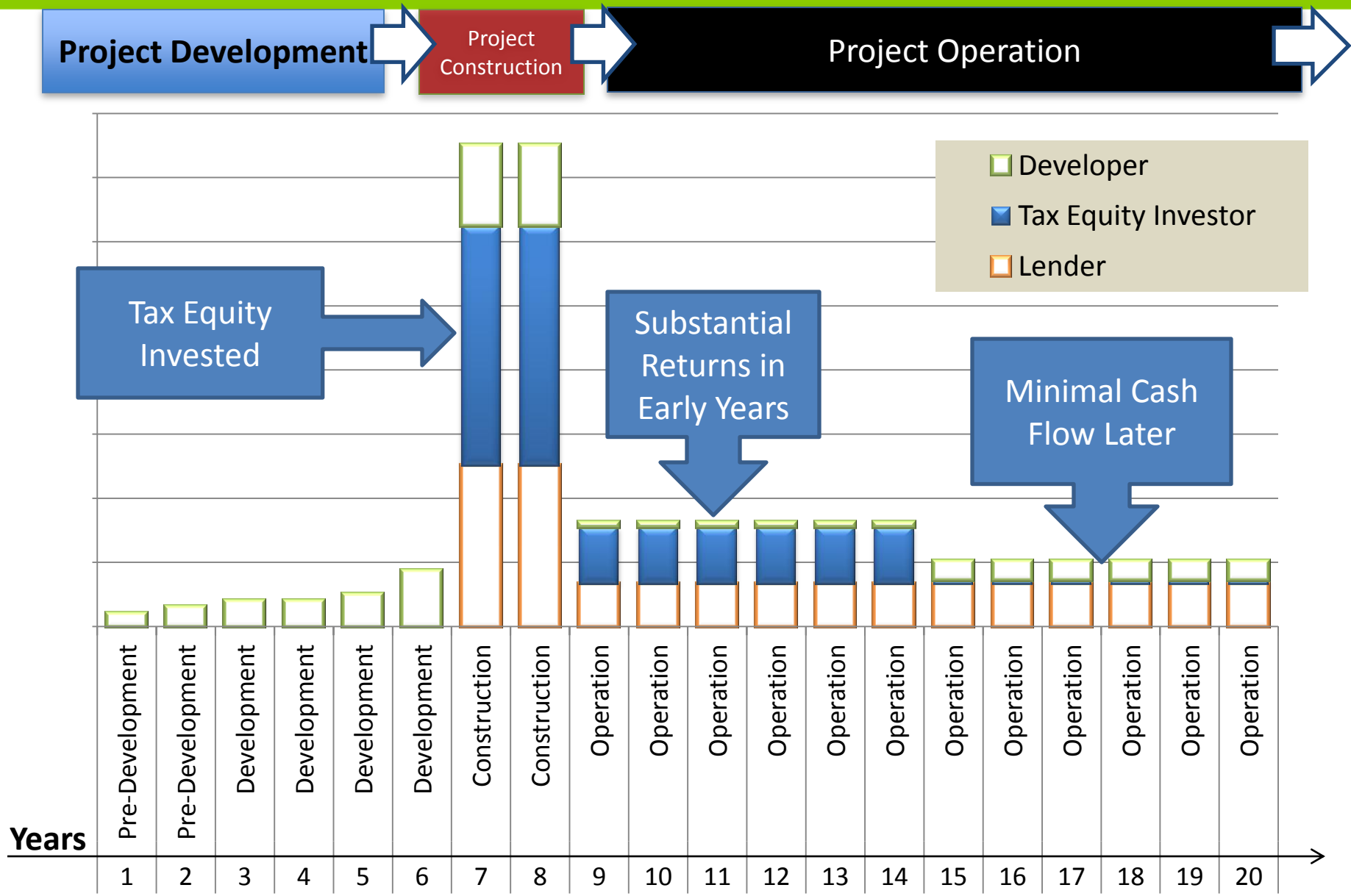

Partnership Flip Illustration

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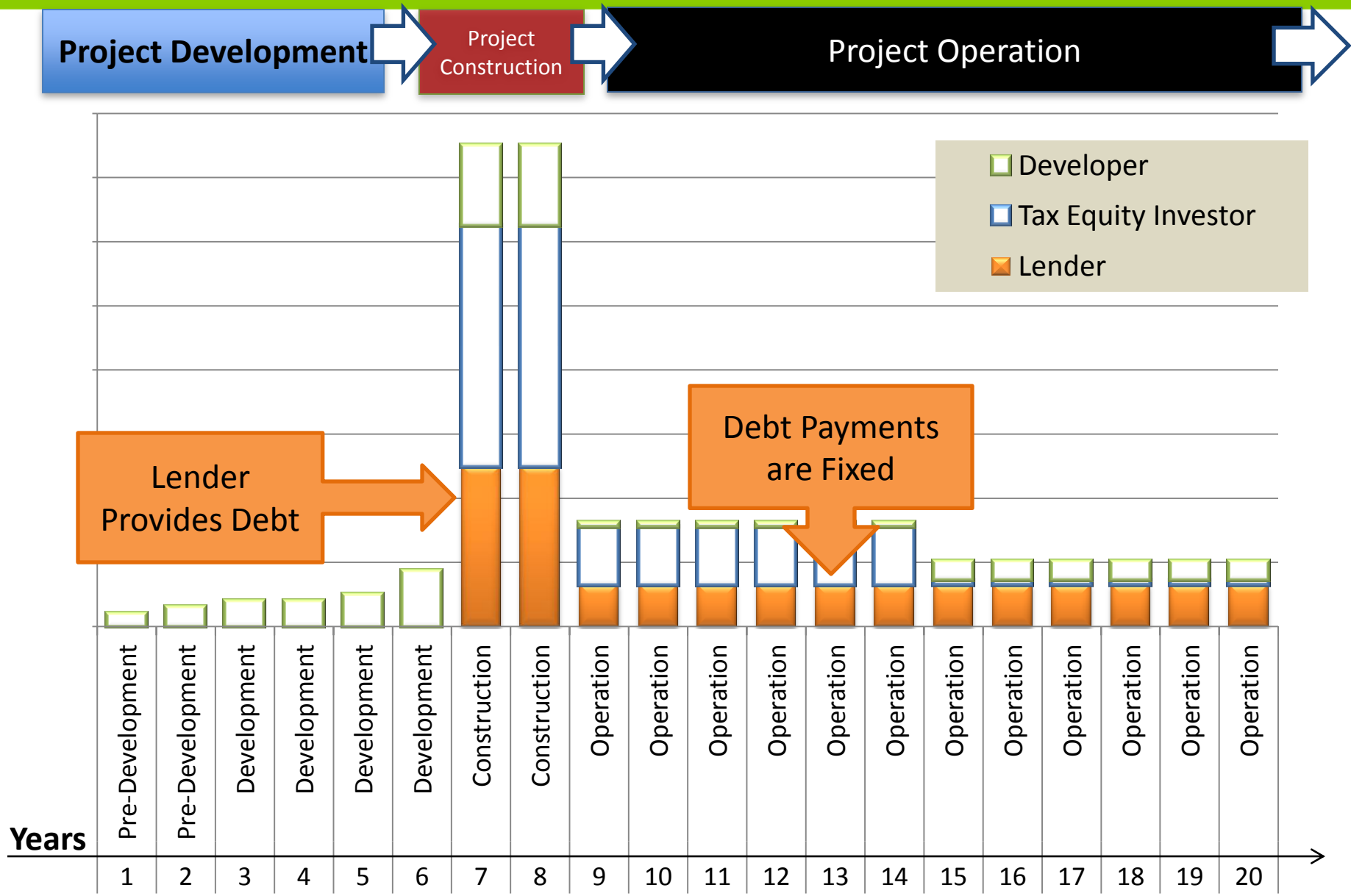

Partnership Flip Illustration

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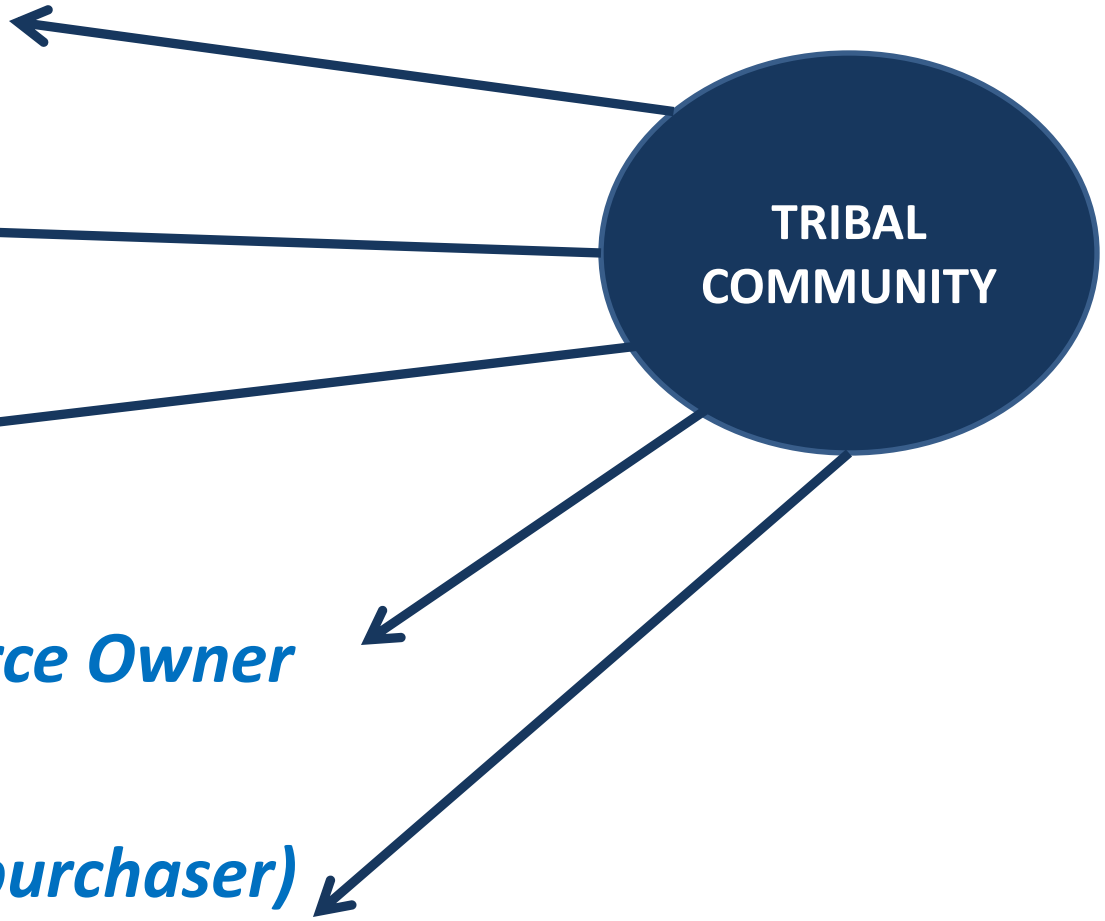
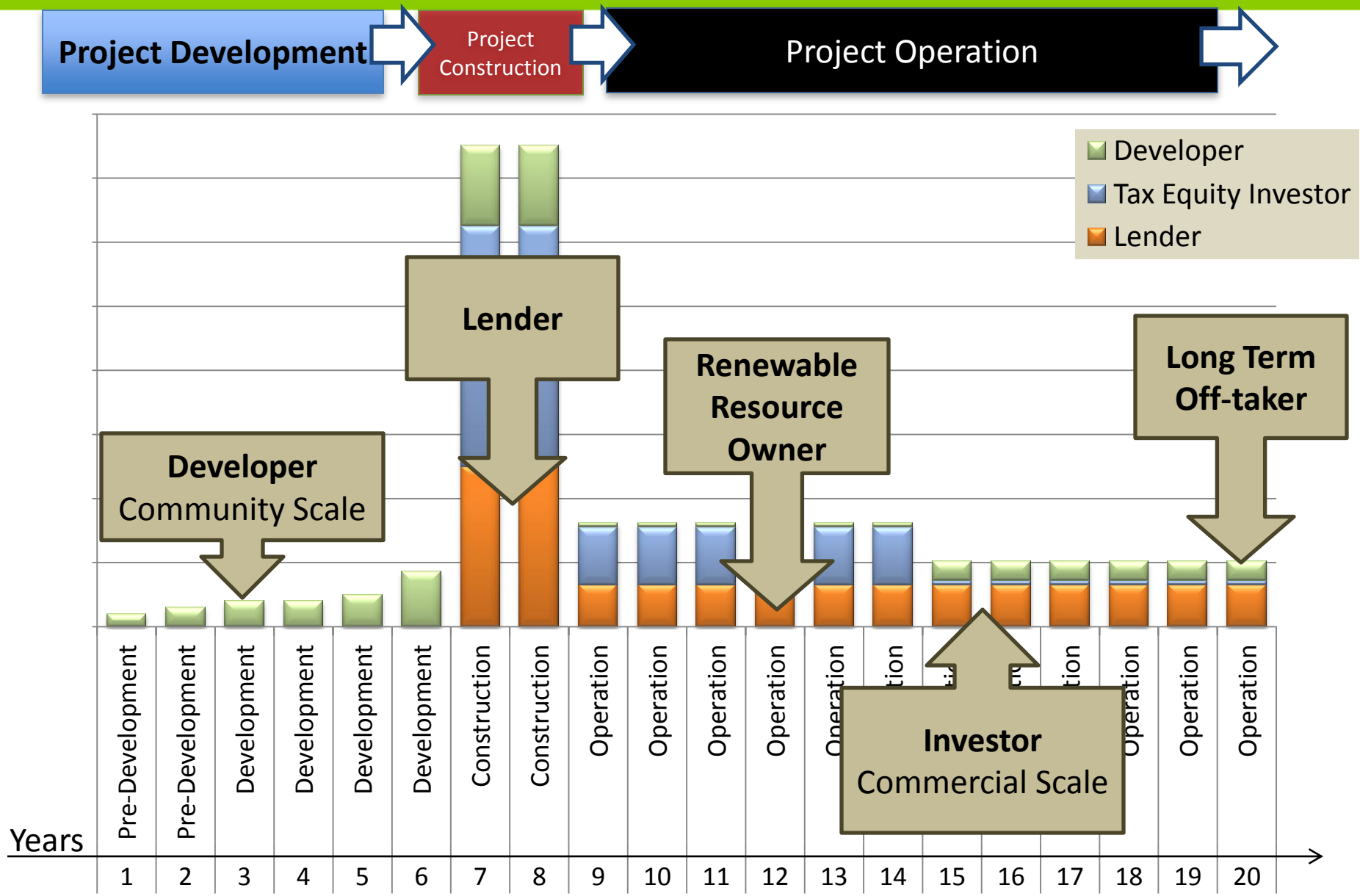
Financial Players in a Project

- *Project Developer*
- *Lender*
- *Investor*
- *Renewable Resource Owner*
- *Off-taker (power purchaser)*




Project Development
Project Construction
Project Operation
Developer
Tax Equity Investor
Lender
Lender
Renewable Resource Owner
Long Term Off-taker
Developer
Community Scale
Investor
Commercial Scale
Years
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Case Example – Project Development

- The **Campo Band of Mission Indians of the Kumeyaay Nation** has a successful wind project and is working on another.
- Largest commercial wind facility in Indian Country. 50 MW project with 25 turbines constructed in 2005, online in 2006.
- **Tribe is compensated for use of land and capture of renewable energy resources.**
- **Project Finance: Tax equity**
- Tribe now negotiating 160 MW project comfortable to pursue greater participation.

Source: La Chappa, M. and Estes, M. (November 2011). "Renewable Energy: Security, Independence, and Economic Development." Presented at the DOE Tribal Energy Program Review Meeting. http://apps1.eere.energy.gov/tribalenergy/pdfs/re_dev_campo_wind_estes.pdf.
Photo from Campo Band of Mission Indians of the Kumeyaay Nation, NREL/PIX 16548.

Case Example – Self Sufficiency

PROJECT: The **Yocha Dehe Tribe** is collaborating with UC Davis and the local community on the Capay Valley Energyshed project, which will evaluate current energy usage valley-wide and assess the potential for an increased use of renewables.

Almost 20% of Cache Creek Casino Resort's peak energy demand is supplied by onsite generation of energy from the solar array and fuel cells.

MARKET BARRIER: Energy independence

TRIBE'S ROLE: Owner, developer, Off-taker

TRANSACTION SUMMARY: The Tribe participates in PG&E's Base Interruptible Program, which means the resort will completely disconnect from the utility power source.

OUTCOME: The Tribe will produce its own energy from generators whenever PG&E needs more energy to meet peak demand. This program reduces the need to build new power plants.

Source: "Energy." *Yocha Dehe Wintun Nation*. http://yochadehe.org/land-resources/sustainability-initiatives/en.
Photo by Steve Wilcox, NREL/PIX 15550.

Case Example – PPA Third Party Financing

PROJECT: Boulder County, Colorado, exercised a third-party PPA option by making investments to lower solar project costs.

MARKET BARRIERS: Cost of electricity; price stability; energy demand and net-metering

LOCAL GOVERNMENT ROLE: Sponsor, investor/financier, off-taker

TRANSACTION SUMMARY: This structure takes advantage of a government entity's ability to issue tax-exempt debt or to tap other sources of funding to buy down the cost of the project.

POTENTIAL OUTCOME: Pre-payments can improve economics for both parties and provide greater price stability over the life of the contract.

Project Name	Boulder County Solar Project
Size (DC) Type	615 kW; 570 kW rooftop, 45 kW ground
Developer	Bella Energy
Owner	Rockwell Financial
PPA Terms	20 years, fixed-price 6.5 ¢/kWh for first 7 years, renegotiate price and buyout option at beginning of year 8

Source: "Power Purchase Agreement Checklist for State and Local Governments." (October 2009). Published by NREL. http://www.nrel.gov/docs/fy10osti/46668.pdf.

Case Example - PPA Third Party Financing

PROJECT: Denver International Airport (DIA) installed a 2-MW solar array to provide up to half of the electricity to power the people mover transit system.

MARKET BARRIERS: Cost of electricity; price stability; construction risks

GOVERNMENT ROLE: Sponsor, off-taker

TRANSACTION SUMMARY: MMA Renewable Ventures financed and owns the project and sells the electricity it produces to the airport under a long-term power purchase agreement.

OUTCOME: DIA reduced electricity costs; Xcel Energy uses the RECs to fulfill its state renewable energy obligation by 2020; MMA Renewable Ventures sells the RECs to Xcel; receives a rebate from Xcel; receives a large tax federal break; and generates guaranteed revenue from the electricity the array produces.

Project Name	Denver Airport Solar Project
Size (DC) Type	2,000 kW; Ground-mount, single-axis tracking
Developer	World Water & Solar Technologies
Owner	MMA Renewable Ventures
PPA Terms	25 years, fixed-price 6 ¢/kWh for first 5 years, buyout option at beginning of year 6 or price increases to 10.5 ¢/kWh

Sources: "Power Purchase Agreement Checklist for State and Local Governments." (October 2009). Published by NREL. http://www.nrel.gov/docs/fy10osti/46668.pdf.
"Green Wombat". (October 2007). Published by Todd Woody. http://thegreenwombat.com/2007/10/01/denver-airport-goes-solar/.

THANK YOU

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