



camco

How Carbon Credits are Generated from Livestock Projects

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About Camco

- **Camco is an emissions reduction business**
 - Carbon – origination, qualification and delivery of carbon credits
 - Investment – anaerobic digestion, co-digestion, nutrient reduction
- **Leading fully-integrated global climate change business**
 - One of the largest portfolios of carbon offsets globally
 - Over 10 years of experience
 - Manages the largest inventory of US livestock carbon credits in CAR (over 100,000 tons/year)
- **Service orientation with extensive experience for delivery & selling to enable our Partners to maximize their return on Carbon**



Camco's Role in Quantifying Carbon Credits

Feasibility Analysis

Registration

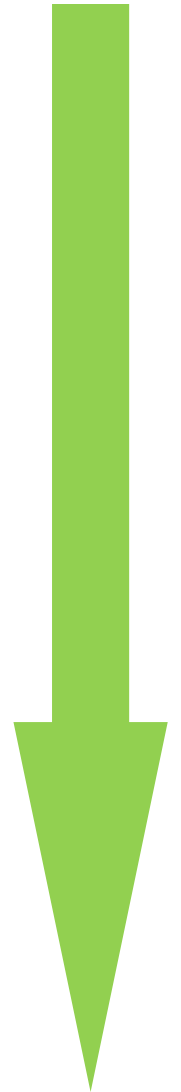
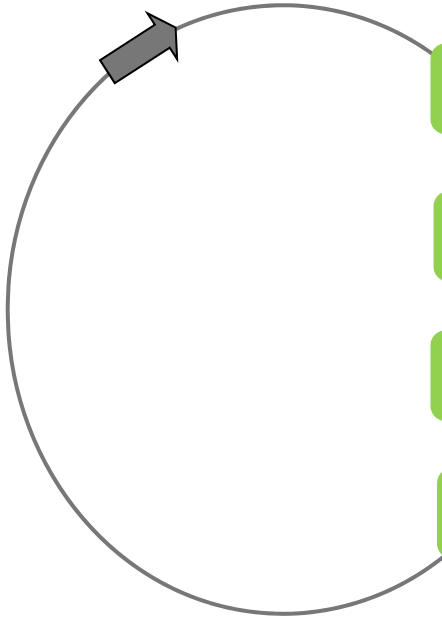
Monitoring

Operations Optimization

Documentation

Verification

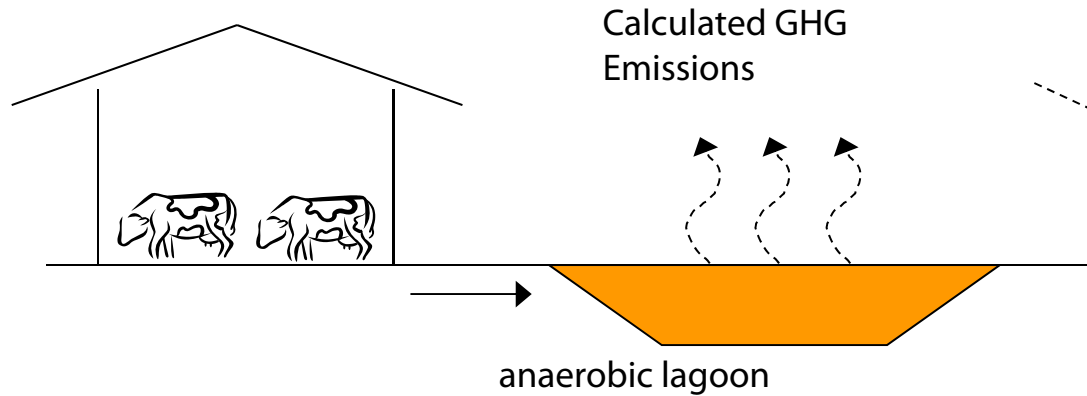
Commercialization & Structuring





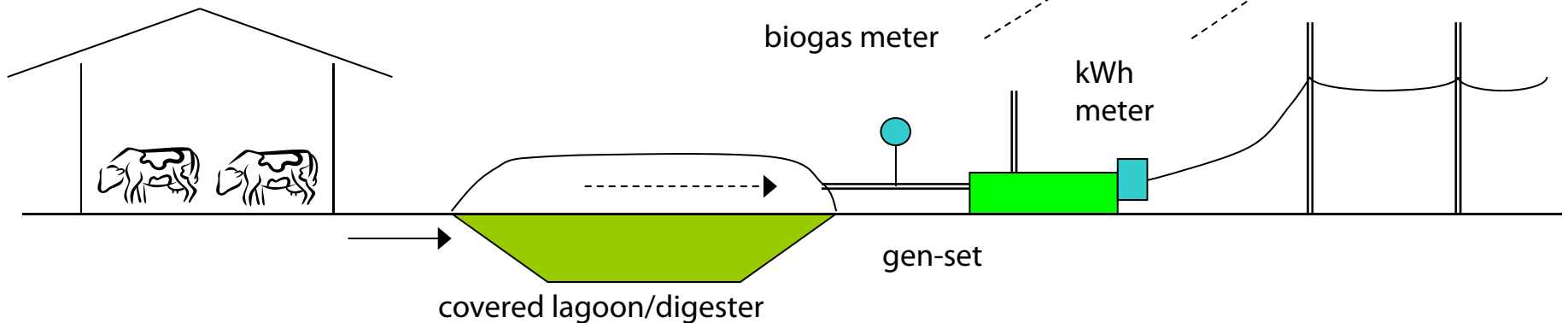
Carbon Credit Yield: Baseline vs. Biogas Produced

Baseline



Carbon Credits

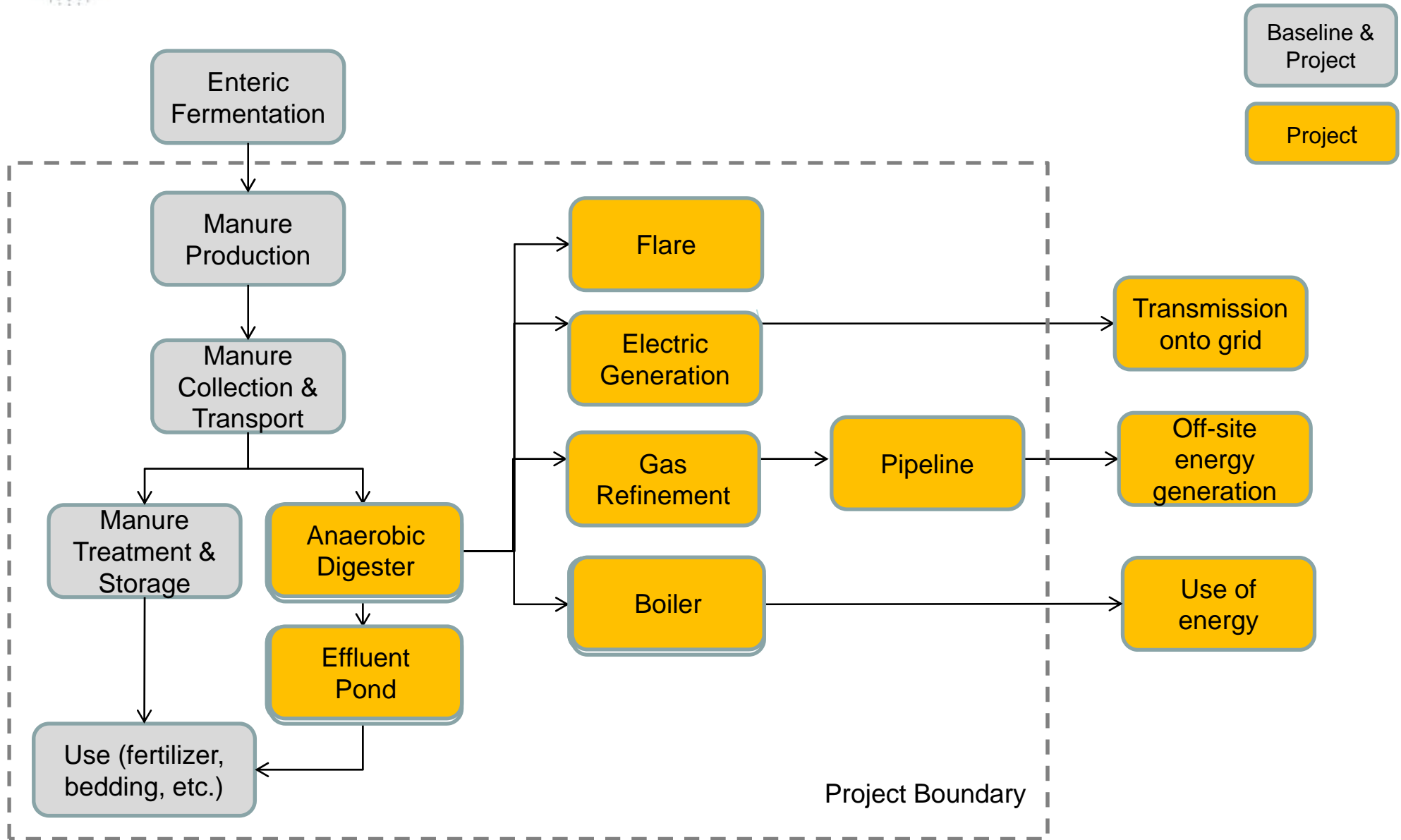
Project



RECs



Keeping Track of all Activities





Projects: Central Sands Dairy

- Constructed in 2008 (digester completed in 2009).
- Currently in 3rd verification period
- Farm covers about 5,000 acres
- ~4,000 head of dairy cattle





Central Sands Dairy: AD System Setup



GHD Digester – Mixed Plug Flow, 100F



Runs a boiler, which heats the digester



Runs a 720kW genset



Runs an open flare



Central Sands Dairy: Monitoring

Fuel Use

- Accounting
- Software

Biogas Flow & Destruction

- Instrumentation
- Datalogging

Herd Population

- Software
- Physical Count



#	Parameter	0501	0601	0701	0801
1	REPRODUCTION				
2	* PRBG/HRSD	50	51	51	50
3	ABORTIONS	20	25	33	24
4	* OPEN DIM-180	10	9	11	11
5	AVG DAYS DRY	56	56	56	56
6	No. Dry>70	27	29	35	25
7	No. Fresh L>1	136	147	196	179
8	* PRBG/VTCHCK	56	52	52	43
9	AVG DAYS N MILK	167	171	167	166
10	AVG DIMFS/Herd	60	60	60	60
11	AVG DIMFS/Month	61	64	63	62
12	AVG DOPN/Herd	108	109	108	108
13	AVG DOPN/Month	105	115	103	104
14	AVG CALVING INT	395	395	394	392
15	* DIM-60 NoHeat	80	65	70	63
16	* DIM-60 NoHeat	1	2	0	0



Project: Double A Dairy - Idaho

- **Example of Investment + Carbon Management Project**
- >10,000 head of dairy cattle
- 4.5MW power generation





Monitoring and More: Areas to Watch Out For

- Availability and accuracy of data (baseline and project)
- Tracking methane reductions continuously and interpolating missing data
- Project emissions leakage
- Scheduling and interacting with third parties (verifiers, gas analysis, calibrations)
- Continually-changing clarifications & errata from the protocol





Costs to Monetize Offsets

- Monitoring equipment
- Time and materials to review and manage monitoring data
- Time and materials to prepare reports
- 3rd Party verification services
- Transaction fees to register/retire credits
- Time and effort to transition to ARB offsets
- Sales commission(s) if applicable



Transitioning from Volunteer to Compliance

	Compliance	Voluntary
Price	Pricing tends to be higher. Some future price transparency. Currently driven by policy developments	Pricing more opaque – Project type and location dependent. Ag typically viewed with more favorability than other types.
Transaction Costs	Can be significant – regulatory approvals and compliance and legal contracting	Significant but not as onerous
Liquidity/Trading	Liquidity is improving but will need to see ARB process up and running	Little liquidity – buyers often retire offsets once purchased
Spot vs. Forward Pricing	Buyer appetite for forward deals but significant regulatory uncertainty makes transaction difficult	Appetite for spot and forward deals. Recent volatility has made buyers wary about forward purchases.
Bottom Line = Important to have an experienced carbon developer who is able to maximize credits, navigate the changes taking place, and transact with large emitters		

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