



**Our products
work here**



**to keep
this clear.**

Westport Carbon Project

NGVAmerica

Jonathan Burke - August 2010

Westport[™]

*Creating a Better World
through Innovative Energy Solutions*

www.westport.com

The Westport Carbon Project - Background

- Supports our economic and environmental value proposition
- Demonstrates the rigorously verifiable GHG emission reductions of Westport GX and CWI ISLG HD NG engines
- Project can be expanded to include engines currently in development with partners
- First global transport project registered to VCS
- First VCS project in Canada
- Project periods are for 10 years or 7 years renewable up to 2x



News Release

[Home](#) > [News & Resources](#) > [News Releases](#) > March 25th, 2010

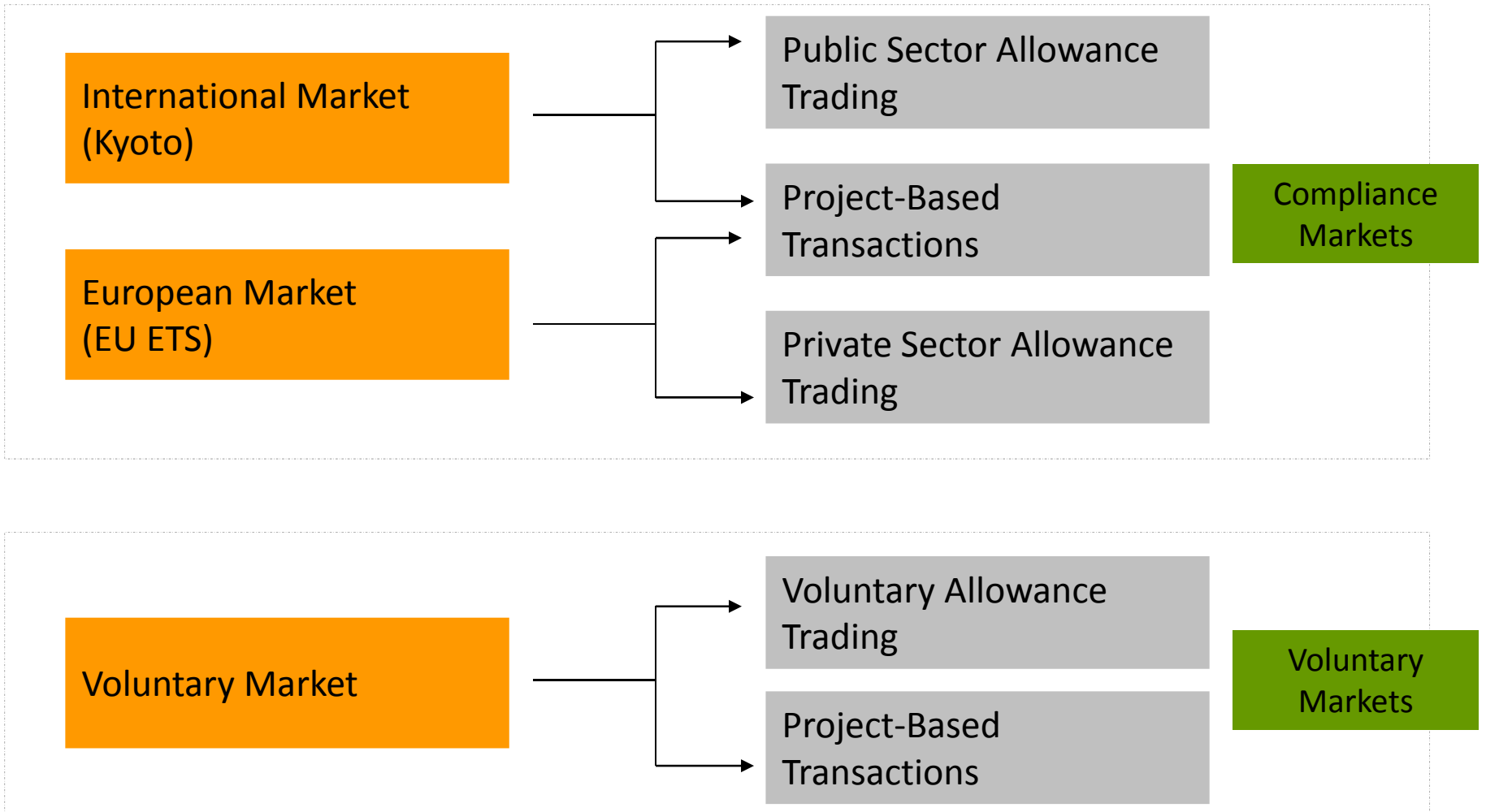
Westport Announces the First Global Carbon Finance Program for Transportation Registered to the Voluntary Carbon Standard

March 25th, 2010

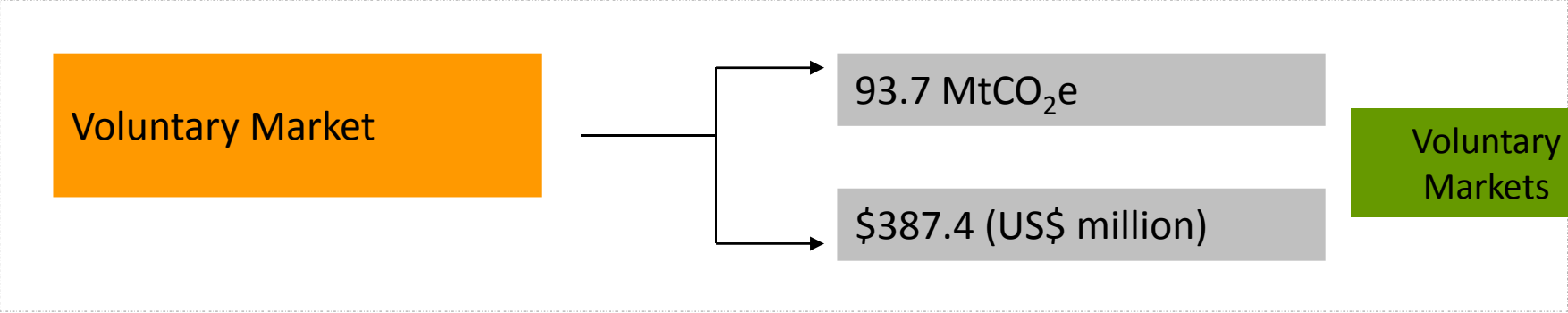
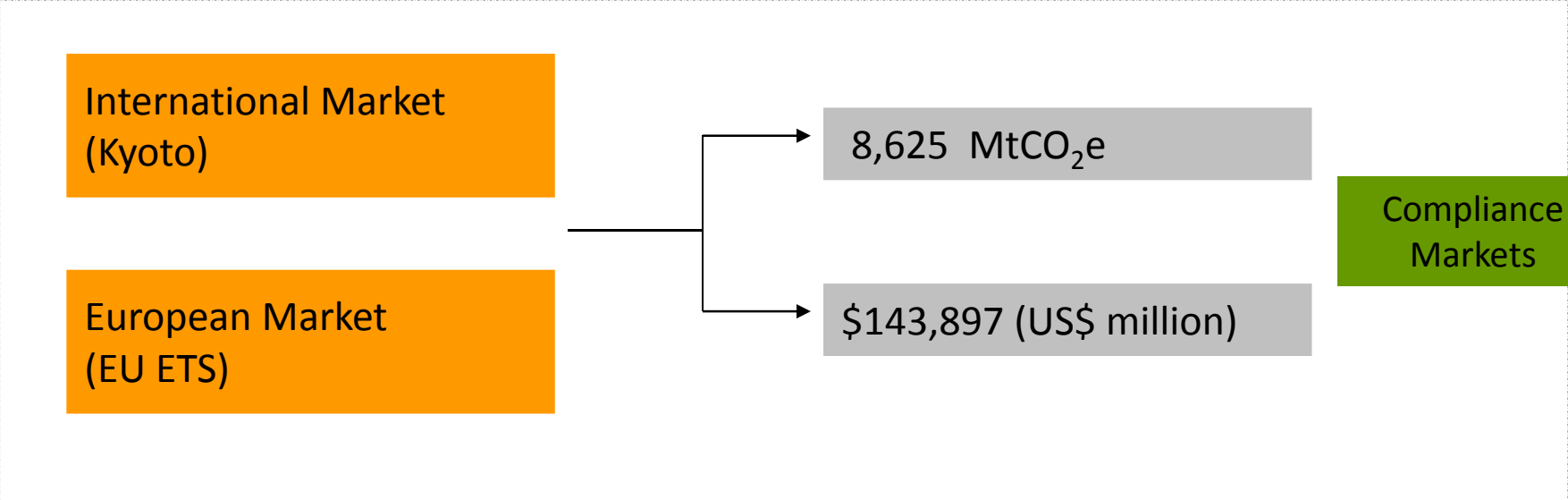
Carbon Terminology

- Carbon Credit – Any instrument that represents a tradable right in GHG reductions. (One metric tonne CO₂e)
 - **Emission Allowances (regulated carbon market)**
 - A compliance instrument or means of setting emissions targets for countries or companies.
 - Represent a permit to emit one metric tonne CO₂e granted to participants in a cap and trade emissions scheme
 - Defined and administered pursuant to a formal trading scheme
 - **Project-Based Offsets (voluntary carbon market)**
 - Given to projects that reduce the amount of CO₂e emissions calculated against an established BAU baseline
 - Once issued to a project, can be sold to another party
 - May be allowed for compliance purchases in a regulated scheme

Carbon Trading Systems

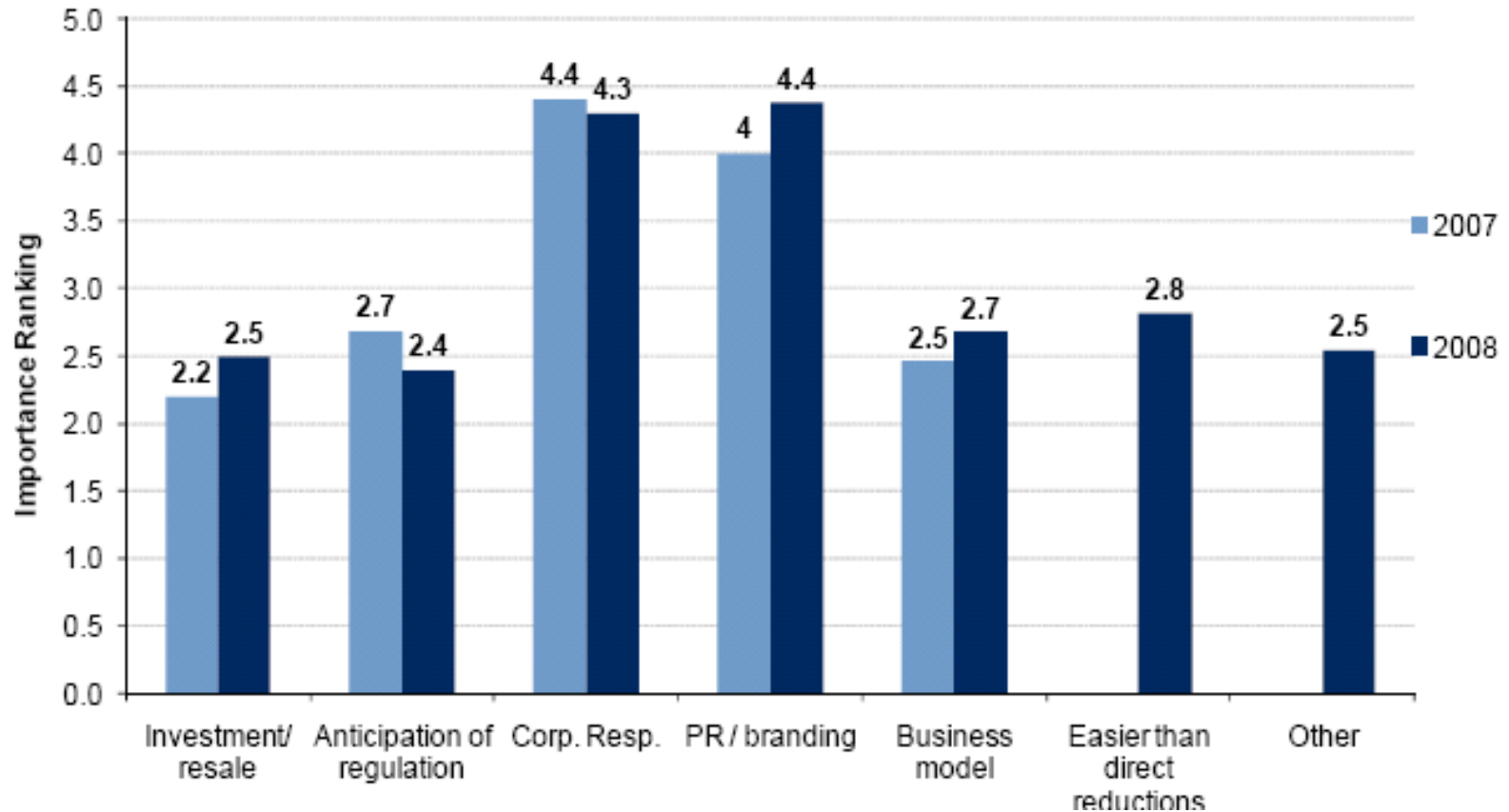


Carbon Trading Volumes and Values (2009)



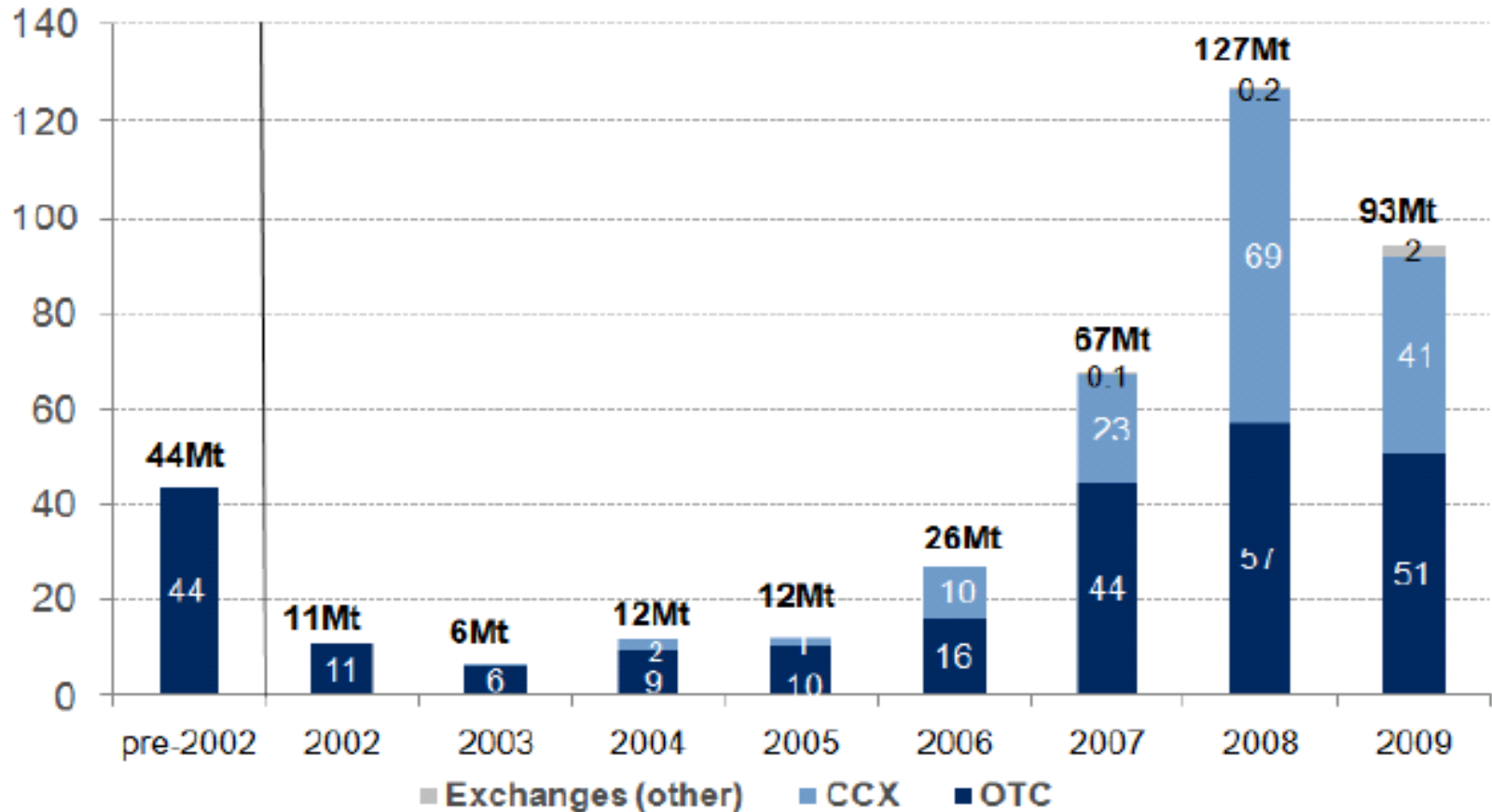
Ecosystem Marketplace and Bloomberg New Energy Finance, 2010: State of the Voluntary Carbon Markets
(Available at http://www.forest-trends.org/publication_details.php?publicationID=2433)

Motivations for Purchasing Offsets



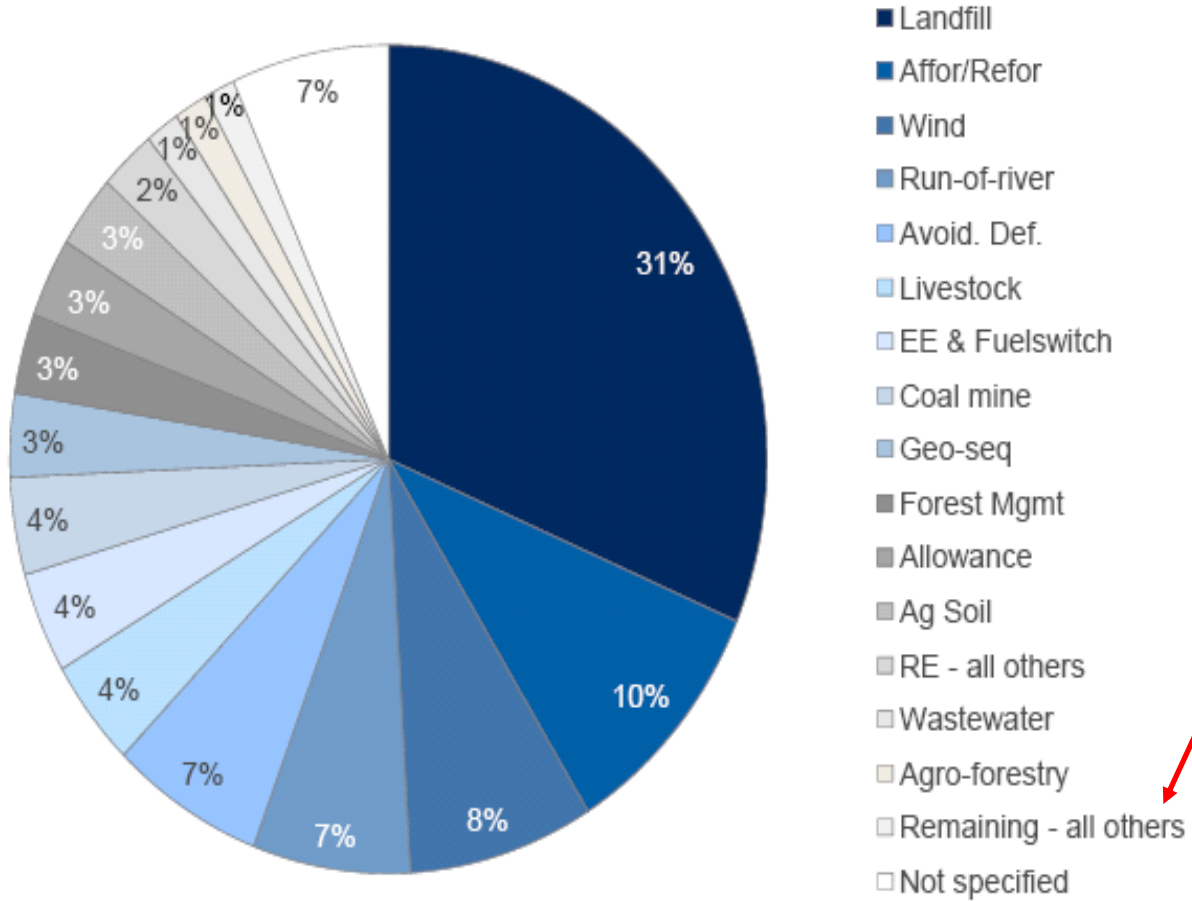
Ecosystem Marketplace and New Carbon Finance, 2008: State of the Voluntary Carbon Markets
(Available at <http://www.carbonpositive.net/viewFile.aspx?FileID=147>)

Historic Values for the Voluntary Carbon Markets



Ecosystem Marketplace and Bloomberg New Energy Finance, 2010: State of the Voluntary Carbon Markets
 (Available at http://www.forest-trends.org/publication_details.php?publicationID=2433)

Transaction Volume by Project Type, OTC 2009



Transport Projects Included as "Other Types"

Ecosystem Marketplace and Bloomberg New Energy Finance, 2010: State of the Voluntary Carbon Markets
 (Available at http://www.forest-trends.org/publication_details.php?publicationID=2433)

“The easy projects are finished. Landfills are gone. Chemical plant fuel-switch projects are gone. That’s an old story. Now the real problems and the more sophisticated issues like transportation are coming.”

....Clean Development Mechanism panel member as cited in Ball and Ortolano (2010)
“Constructing Carbon Offsets: The Obstacles to Quantifying Emission Reductions”
The Journal of Energy Policy

The Challenge of Transportation Projects

Scale

- The cost of establishing a project is prohibitive for only the largest fleets

Validation

- Design methodology to validate/verify emissions reductions

Complexity

- Default IPCC emission factors vs. actual EPA certification data

Regulatory Uncertainty

- Will transportation emissions be included?

Carbon Pricing

- Volatility of pricing in the voluntary market with ranges of \$1 - \$25 CDN/tonne

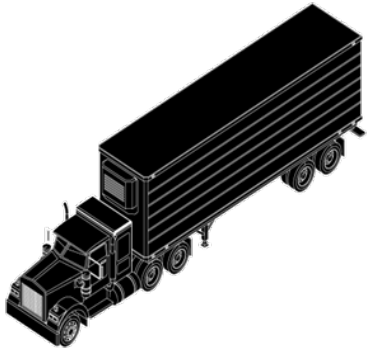
The Challenge of Additionality

“The emissions resulting from the project are lower than the baseline emissions that would be likely without the project. The project must prove that the emission reductions are additional to any that would occur in the absence of the certified project activity.”

- Must demonstrate the existence of barriers that hinder the implementation of the project
 - Financial additionality based on higher costs of LNG/CNG vehicles
 - Extra costs for vehicles borne by buyers and not Westport
 - Technical barriers related to limited fueling infrastructure
 - Barrier of prevailing practice. Lack of information and experience with regard to LNG/CNG vehicle technology. NGV are less than 1% of current vehicle market in North America

Overview of the WCP

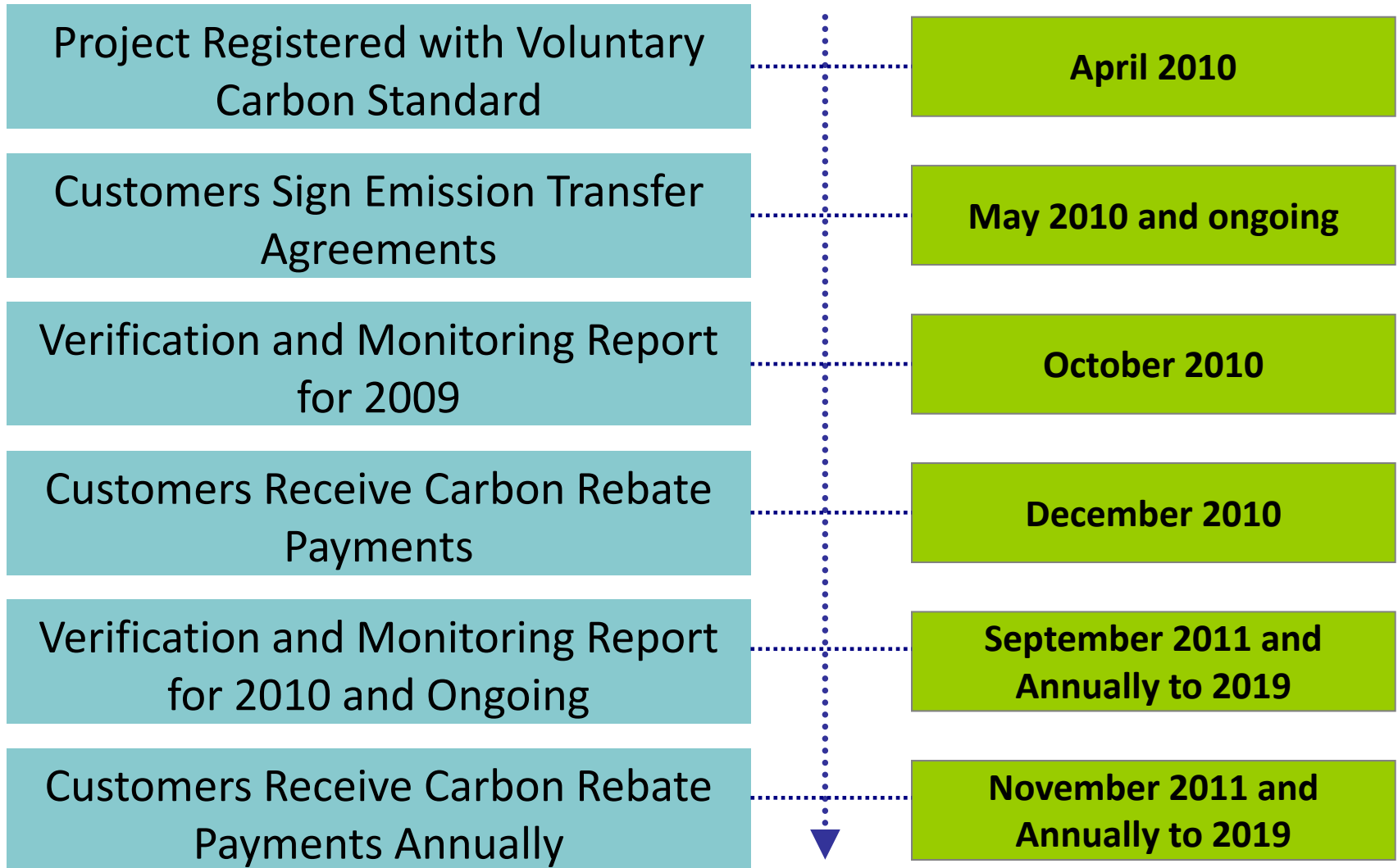
1. Vehicles from global fleets “bundled” into the WCP
2. Customers required to sign emission transfer agreements transferring ownership of emissions to Westport
3. Westport verifies emissions data via annual survey
4. Carbon is monetized and rebate cheques are issued to customers annually
5. Customer retains carbon glory, has evidence of certified emission reductions



40 tonnes per year x \$20 per tonne = ~\$800 per vehicle*

* Carbon rebate per vehicle dependent on carbon price per tonne and vehicle operating data collected via annual survey

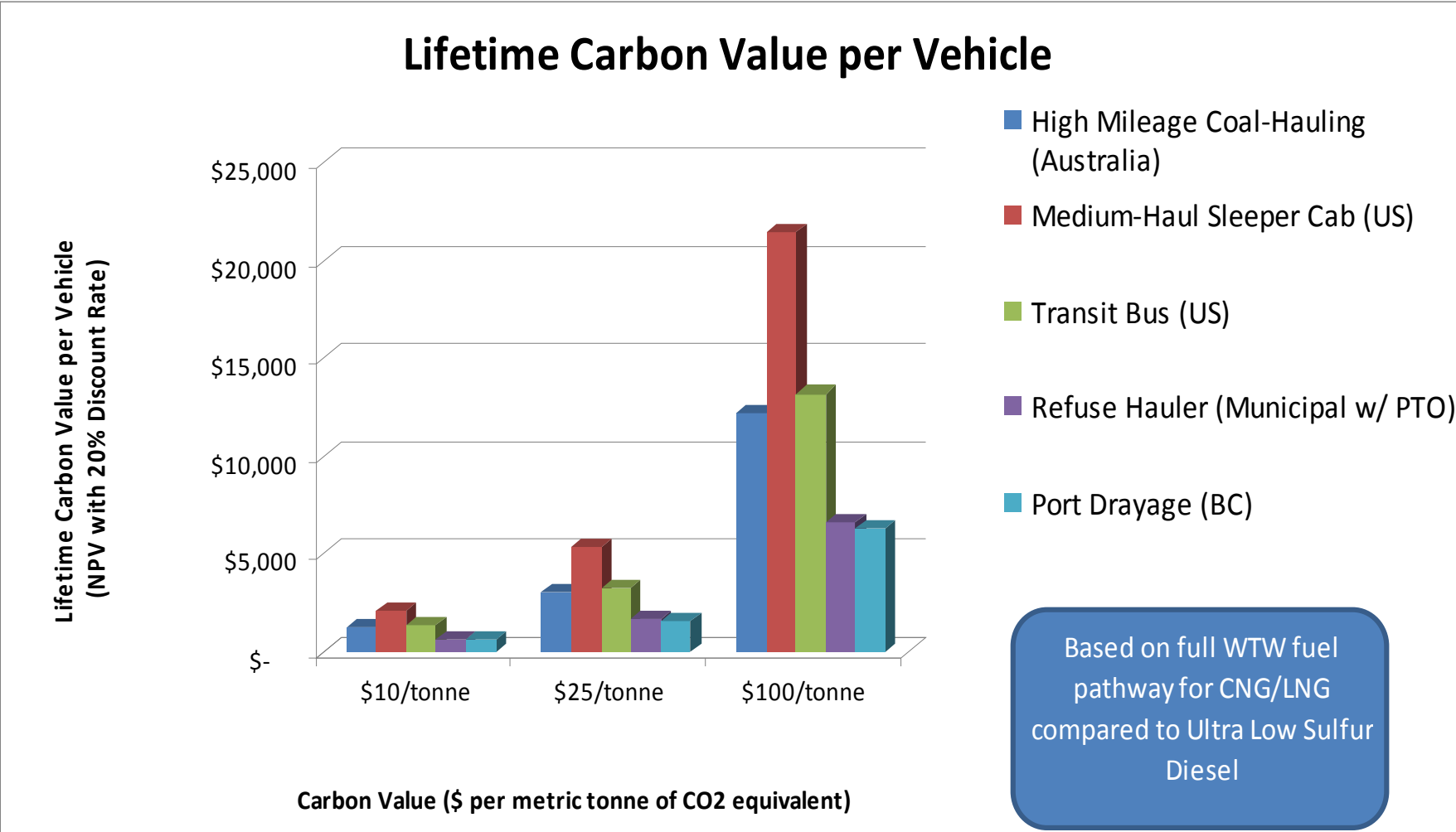
WCP Timeline



Data Needed from Customers for Verification

Index	Indicator	Gathering frequency	Data source
1	Specific fuel consumption of comparable diesel vehicles (per vehicle category)	Annual	Survey per vehicle category
2	Specific fuel consumption of Westport vehicles per vehicle category	Annual	Survey per vehicle category
3	Number of Westport vehicles per vehicle category	Annual	Survey per vehicle category
4	Annual distance driven of Westport vehicles per vehicle category	Annual	Survey per vehicle category
5	GHG market regulations in the region/country of sale	Annual	Desk study in accordance with VCS requirements (not required for Canada or for non-Annex I countries)

Lifetime Carbon Value per Vehicle



Three Carbon Revenue Projections

	\$10/tCO ₂ e	\$30/tCO ₂ e	\$100/tCO ₂ e
Annual Fleet Carbon Revenue	\$3.1 Million	\$9.4 Million	\$31 Million
NPV (10 year, Fleet Carbon Revenue)	\$16 Million	\$47 Million	\$157 Million
Annual Carbon Revenue Per Vehicle	\$209	\$627	\$2,090
NPV (10 years, Carbon Revenue) Per Vehicle	\$1,050	\$3,150	\$10,500

Based on:

- 15,000 vehicle fleet each doing 40,000 miles per year at 5 miles/dge using domestic LNG
- 20% discount rate used for Net Present Value calculations.

CWI Case Study

Three Carbon Revenue Projections

	\$10	\$25	\$100
Annual Fleet Carbon Revenue	\$1.2 Million	\$2.9 Million	\$12 Million
NPV (7 year, Fleet Carbon Revenue)	\$4.3 Million	\$11 Million	\$43 Million
Annual Carbon Revenue Per Vehicle	\$168	\$421	\$1,685
NPV (7 years, Carbon Revenue) Per Vehicle	\$610	\$1,500	\$6,100

Based on:

7,000 vehicle fleet (refuse haulers) each doing 24,900 miles per year at ~3 miles/dge using Domestic CNG compared to ULSD.

20% discount rate used for Net Present Value calculations.

Westport GX Case Study

Three Carbon Revenue Projections

	\$10/tCO ₂ e	\$30/tCO ₂ e	\$100/tCO ₂ e
Annual Fleet Carbon Revenue	\$3.1 Million	\$9.4 Million	\$31 Million
NPV (10 year, Fleet Carbon Revenue)	\$16 Million	\$47 Million	\$157 Million
Annual Carbon Revenue Per Vehicle	\$209	\$627	\$2,090
NPV (10 years, Carbon Revenue) Per Vehicle	\$1,050	\$3,150	\$10,500

Based on:

- 15,000 vehicle fleet each doing 40,000 miles per year at 5 miles/dge using domestic LNG
- 20% discount rate used for Net Present Value calculations.

Outstanding Issues and Questions

- Comfort level with regulatory uncertainty in North America
- What are competitors doing? What is the impact of carbon “certification” on vehicle sales?
- Strategy for carbon revenue generated
- Wide, volatile range of carbon credit valuations
- Larger technical issues about how to manage and account for methane emissions at all stages of the life-cycle of the fuel including production, transportation, fueling, engine operation and waste remain.
- 100,000 tonnes is generally considered to be the threshold for transportation projects in terms of transaction costs