

State of Water Infrastructure in the US-Mexico Border Region



Development and Certification of
Environmental Infrastructure Projects



Good Neighbor Environmental Board

March 22, 2012

Border Environment Cooperation Commission



US–Mexico Border Environment Cooperation Agreement



Border Environment Cooperation Commission (BECC)

North American Development Bank (NADBank)

“Preserve, protect, and enhance US-MX border region by identifying, developing, implementing and overseeing **environmental infrastructure projects.**”

A project that will “prevent, control or reduce environmental pollutants or contaminants, improve the drinking water supply, or protect flora and fauna so as to improve human health, promote sustainable development, or contribute to a higher quality of life.

Projects certified by the BECC are financed by the NADB or other institutions

BECC Overview – Mandate Scope



Jurisdiction

100 km north (population 13.9 million) and 300 km south (population 16.6 million) of the international boundary.

Projects beyond these areas may be eligible if they remedy a cross-border environmental or health problem.

BASIC SECTORS

- Water pollution
- Wastewater treatment
- Water conservation
- Municipal solid waste
- Industrial and hazardous waste
- Recycling and waste reduction



EXPANDED SECTORS

- Air quality
- Clean and efficient energy
- Public transportation
- Municipal planning and development
- International border crossings
- Energy transmission / distribution of energy
- Production of goods / services to enhance or protect the environment, if the project provides a net environmental benefit to the region
- Other infrastructure designed to minimize future negative environmental impacts in the region

New!

Certified Projects (US\$M)



California, 14
\$ 254.66

Arizona, 15
\$ 168.11

New Mexico, 9
\$ 67.74

Texas, 48
\$ 847.28



104 in México
\$ 3,005.46

87 in U.S.
\$ 1,337.79

Tamaulipas, 16
\$ 623.80

Baja California, 29
\$ 1,217.90

Sonora, 27
\$ 559.43

Chihuahua, 24
\$ 342.02

Coahuila, 3
\$ 156.60

Nuevo León, 5
\$ 105.71

*Only contracted agreements are included, not total approvals.

CERTIFIED PROJECTS **191**

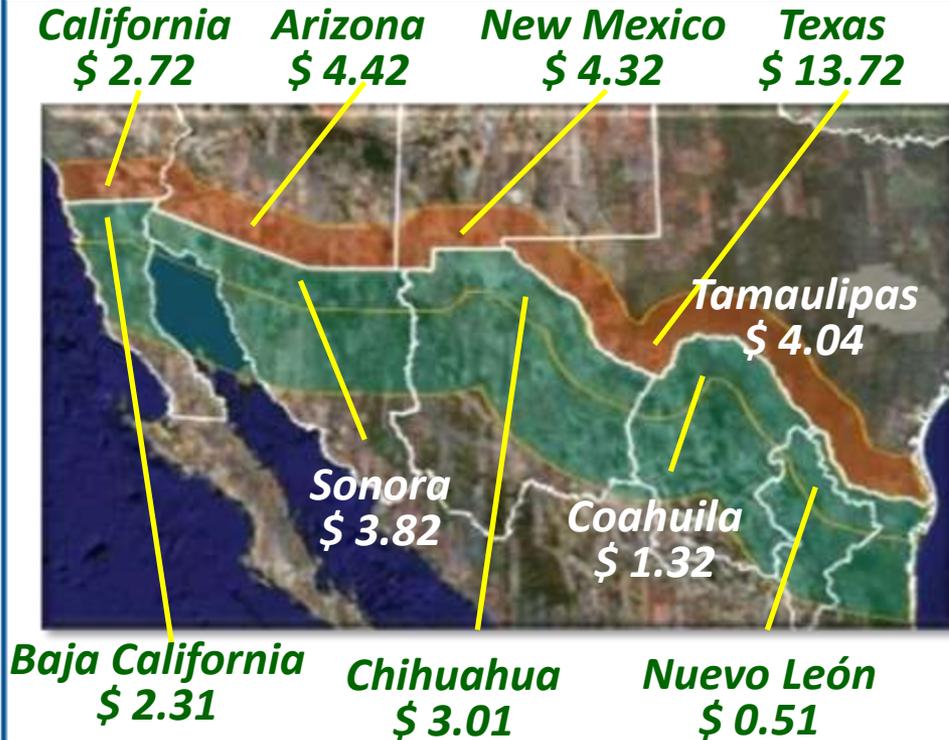
POPULATION BENEFITED (M) **13.8**

TOTAL INVESTMENT (BD) **\$4.343**

NADB FINANCED PROJECTS* **152**

NADB FINANCING* (BD) **\$1.326**

Technical Assistance and Training



2011 Training

5 events (Solid Waste Workshop in Hermosillo, Sonora and Reynosa, Tamaulipas; Water and Wastewater Training in Sonora; Second and Third Modules of the State Climate Action Plans Workshop)

- **325** attendees
- **US\$130,000** investment

- **2011:** US\$1.00 million - (19 projects, 21% BECC TA)
- **1995-2011:** PDAP/COCEF - **US\$40.34 million**
- **72** communities in Mexico: **US\$15.01 million**
- **90** communities in US: **US\$25.33 million**
- More than US\$34 million in PDAP technical assistance grants for project development in 155+ communities.
- Approximately 85% of these funds have led to projects already implemented or under development.

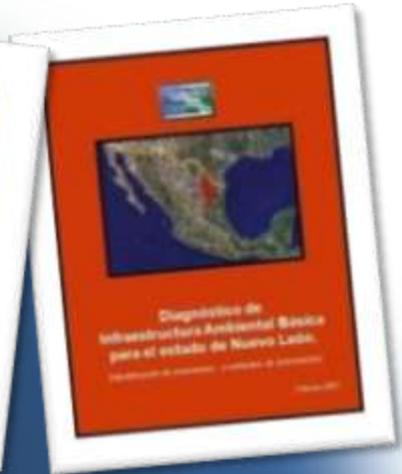
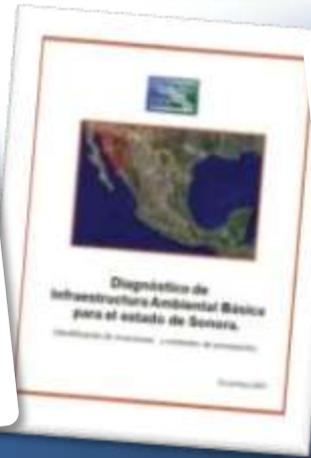
Training events supported by EPA, TCEQ, Conagua, INE and SEMARNAT

State of Water Infrastructure



- Needs Assessments
- Needs vs Investment Resources
- Sustainable Development

Needs Assessments



Services Coverage (%) 100 Km Region



Wastewater treatment coverage in the Mexican border region increased from 21% to 82% between 1995 and 2009; while the current national average is approximately 42%

Infrastructure Needs – MX



State	BECC zone 100 or 300 km	Number of Municipios	Infrastructure needs (million dollars)				Total (million dollars)
			Drinking Water infrastructure needs (million dollars)	Sewer infrastructure needs (million dollars)	Wastewater treatment infrastructure needs (million dollars)	Solid waste infrastructure needs (million dollars)	
Baja California	100 km	5	\$ 42.81	\$ 56.51	\$ 85.70	\$ 108.09	\$ 293.10
	200 a 300 km	0	-	-	\$ -	\$ -	\$ -
Sub-Total BC:		5	42.81	56.51	85.70	108.09	\$ 293.10
Sonora	100 km	27	\$ 15.44	\$ 12.05	\$ 53.93	\$ 12.15	\$ 93.57
	200 to 300 km	31	\$ 7.67	\$ 10.86	\$ 102.22	\$ 13.86	\$ 134.62
Sub-Total Sonora:		58	\$ 23.12	\$ 22.91	\$ 156.14	\$ 26.01	\$ 228.18
Chihuahua	100 km	14	\$ 10.62	\$ 9.11	\$ 23.25	\$ 30.89	\$ 73.87
	200 to 300 km	32	\$ 12.98	\$ 15.74	\$ 81.77	\$ 28.94	\$ 139.43
Sub-Total Chihuahua:		46	\$ 23.60	\$ 24.85	\$ 105.03	\$ 59.83	\$ 213.31
Coahuila	100 km	17	\$ 5.71	\$ 15.04	\$ 40.17	\$ 8.81	\$ 69.75
	200 to 300 km	18	\$ 17.62	\$ 22.31	\$ 158.11	\$ 22.66	\$ 220.70
Sub-Total Coahuila:		35	\$ 23.34	\$ 37.35	\$ 198.28	\$ 31.47	\$ 290.44
Nuevo León	100 km	19	\$ 8.48	\$ 5.53	\$ 2.25	\$ 3.08	\$ 19.35
	200 to 300 km	31	\$ 38.44	\$ 27.75	\$ 11.76	\$ 93.56	\$ 171.51
Sub-Total Nuevo León:		50	\$ 46.93	\$ 33.28	\$ 14.01	\$ 96.64	\$ 190.86
Tamaulipas	100 km	12	\$ 25.92	\$ 47.92	\$ 54.64	\$ 30.91	\$ 159.38
	200 to 300 km	18	\$ 10.03	\$ 30.00	\$ 44.28	\$ 8.74	\$ 93.04
Sub-Total Tamaulipas:		30	\$ 35.95	\$ 77.91	\$ 98.91	\$ 39.64	\$ 252.42
Total BECC border region		224	\$ 195.74	\$ 252.81	\$ 658.07	\$ 361.69	\$ 1,468.31

Infrastructure Needs – US



Challenges in Assessing Infrastructure

- Difficult to define “coverage” since some individual on-site water or wastewater systems adequately meet need
- Official Federal sources (census) and many States do not collect and manage data related to connections to centralized services or other means of accessing potable drinking water or adequate wastewater disposal
- Federal sources such as Clean Water Needs Survey depend on States to report County level data; Data reported represents requests for planned capital improvement needs which may or may not include new service
- BECC assessment reflects a macro level analysis – county level vs community level and info gaps are met with CWNS

Infrastructure Needs – US



While the primary gap in centralized service coverage primarily exists in the rural setting, an investment may likely be required whether connecting to a centralized system or making improvements to address drinking water quality or adequate on-site ww disposal.

Access to Centralized Municipal Services - US Needs and Investment Estimates

State	# of Counties	Drinking Water - Unserved	Estimated Investment - DW	Wastewater - Unserved	Estimated Investment - WW	Total Estimated Investment
California	2	38,864	\$287.6 M	70,803	\$849.6 M	\$1.14 B
Arizona	4	133,491	\$987.8 M	138,359	\$1.67 B	\$2.65 B
New Mexico	5	11,826	\$87.5 M	38,669	\$464.0 M	\$551.5 M
Texas	25	87,377	\$646.6 M	289,609	\$3.48 B	\$4.12 B
Total US Border Region	36	271,558	\$2.01 B	537,440	\$6.45 B	\$8.46 B

- Cost per Household Connection Assumptions
 - Rural DW Hook-up - \$7,400
 - Rural WW Connection - \$12,000

Infrastructure Needs vs Resources



US-Mexico Border Program (EPA-funded Program for PDAP and BEIF): Water and Wastewater Projects

NADB's Loan Programs for construction applicable to water, wastewater, solid waste, air quality, and energy. Includes Bank's role as financial & institutional advisor and as investment banker

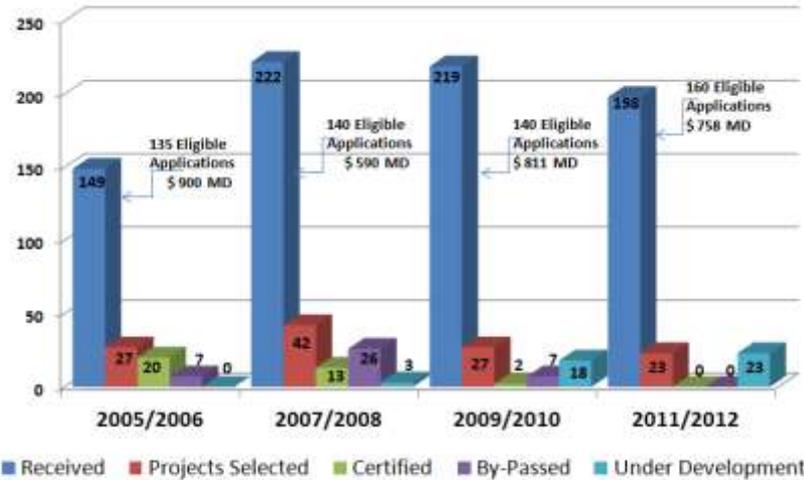
Community Assistance Program (CAP) – Funding priority for water, wastewater, and solid waste project for economically-distressed communities; \$500,000 maximum grant.

Technical Assistance Programs for all sectors BECC and NADB provide grant assistance to project sponsors for institutional strengthening and project development studies.

Institutional Capacity Building: BECC and NADB provide training to project sponsors for institutional strengthening through Sector workshops and Utility Management Institute.

Border 2012 and Special Grants (EPA-funded Program): Address Border 2012 objectives

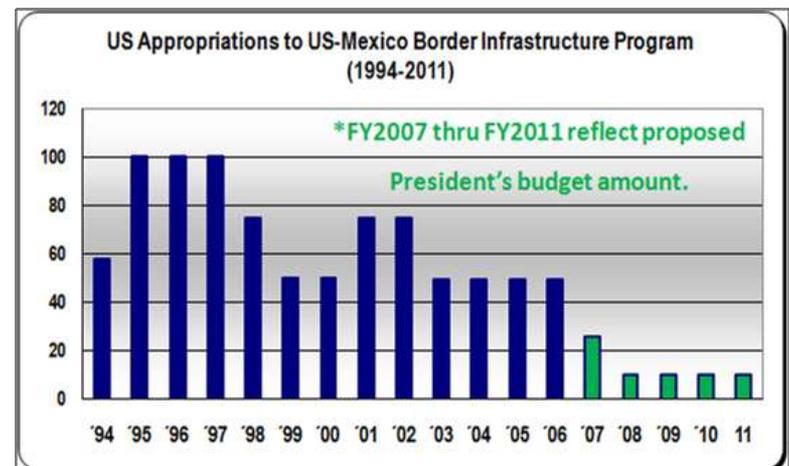
Infrastructure Needs vs Resources



Year	Received	Projects Selected	Certified	By-Passed	Under Development
05/06	\$ 1030 MD	\$ 141 MD	\$ 163 MD	0	0
07/08	673 MD	\$ 252 MD	\$ 107 MD	0	\$ 8 MD
09/10	\$ 1130 MD	\$ 249 MD	\$ 9 MD	0	\$ 62 MD
11/12	\$ 841 MD	\$ 193 MD	TBD	0	\$ 193 MD

- Fewer than 1/3 of the applications submitted for prioritization have accessed BEIF, due to insufficient funding availability from the program.
- A funding trend of \$10M/year will not provide sufficient resources to meet the critical needs still existing for water infrastructure in the region.

- PDAP/BEIF Prioritization Process documents needs on a regular basis (generally a 2-year cycle).
- Needs are prioritized according to the severity of human health and environmental conditions to be addressed by the project.
- All projects if not addressed can have serious consequences.



FY07 received \$50M due to continuing resolution and FY08, FY09 and FY10 received increases at or about \$20M through congressional support

Sustainable Development - Water



FOCUS: Water Infrastructure Strategies

- Green Building Guidelines
- Water Management:
 - Demand Management; Conservation Practices; Financial Sustainability
- Energy Management:
 - Energy Efficiency; Capacity Strengthening; Renewable Energy



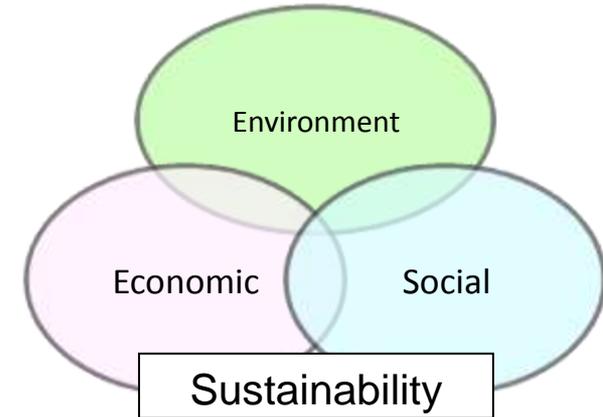
Potential Impact: Improved Resource Management, Reduced Operational Costs, Reduced Greenhouse Gases

Sustainable Development - Water



- Key sustainability principles for applying green building concepts, include:

- Designing for Operating Efficiency
- Seeking to Not Overbuild
- Using Local Materials
- Looking Beyond Initial Costs



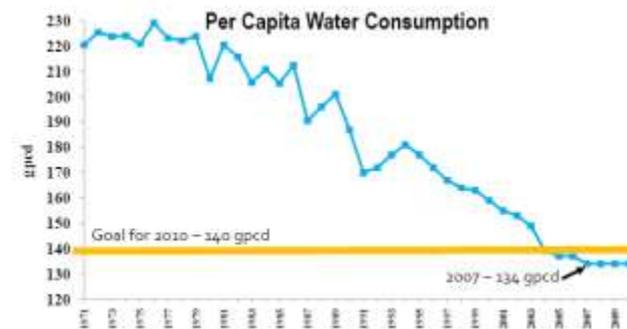
- Support the achievement of an efficient use of resources - energy, water, and materials.
- In coordination with EPA, BECC developed a set of guidelines to incorporate green building decision-factors in all phases of the project cycle.



Sustainable Development - Water



- Planned Development / Demand Management
 - Diversifying Water Supply (Binational Impacts)
 - Regionalization
 - Storm Water Management
- Investment in Rehab and Replacement
 - Leak Detection and Meter Replacement
 - High-Efficiency Equipment
- Conservation and Drought-Management Plans



Sustainable Development - Water



- Enhanced Pollution Prevention and Re-Use Capability
- Sustainable Rate Structures & Reserve Practices
- Outreach, Education and Inter-relating other Sectors (waste management – 3 Rs)
- Influencing Sustainable Agriculture Practices
 - Modernization of Irrigation & Crop Management
 - Improved Delivery Services
 - Policy Support



Sustainable Development - Water



Energy Management

- **Demand Reduction**
 - Water Resource Management
- **Capacity Strengthening**
 - Energy Audits
 - Facility and Process Lighting
 - Equipment Replacement
 - Load Management / SMART software
- **Clean and Renewable Energy:**
 - Wind, Solar
 - Biomass

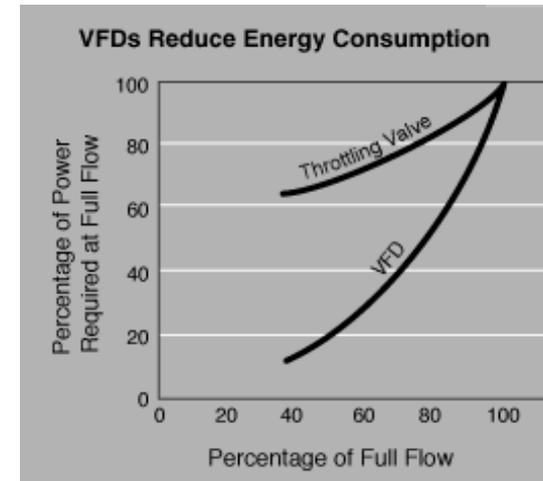


Figure 1. Energy consumption of VFDs and throttling valves.



Water Infrastructure Investment Strategy



- Sufficient Investment in Planning
 - Needs Assessments
 - Field Surveys – Texas and Arizona
 - Improved State Data Collection and Management Systems
 - Quantification of Rehabilitation and Replacement Needs
 - Master Plan Investments
 - Funding Source Collaboration
- Self-sustaining Utilities
 - Water/Energy Efficiency - Audits
 - Alternative sources of energy – Self supply / Renewable Energy
 - Enhanced Rate Structures / Connecting Households
 - Capacity building (institutional strengthening) at all levels – “Best practices”
- New and Leveraged Program Resources
 - US-Mexico Border Water Infrastructure Program
 - State and Federal Program Enhancement

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