

# MAJOR INFRASTRUCTURE PROJECTS IN MEXICO

A Resource Guide for U.S. Industry



Sponsored by the U.S. Trade and Development Agency



*Prepared under contract by:*



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# About This Guide

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The U.S. Trade and Development Agency (USTDA) helps companies create U.S. jobs through the export of U.S. goods and services for priority development projects in emerging economies. USTDA links U.S. businesses to export opportunities by funding project planning activities, pilot projects and reverse trade missions while creating sustainable infrastructure and economic growth in partner countries.

This guide has been developed to provide U.S. companies and exporters with an overview of Mexico's infrastructure sectors, the sector development plans in place through 2018, and to provide profiles of a sample of specific, upcoming projects of potential interest.

Currency amounts converted from Mexican Pesos (MXN) to United States dollars (USD) have been done so using a rate of 13.12 pesos to one dollar. Due to fluctuations in currency values, different levels of engineering and cost estimation completion for different projects, and differing timing of cost information publication, the monetary values within this report should only be considered approximate. Unless explicitly indicated otherwise, all currency values are in United States Dollars (USD).

All exhibits and images are sourced from Mexican government publications, unless otherwise indicated.

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## 3.1.4 Aviation

### Sector Background

By a count of the sheer number of aviation facilities, Mexico ranks third in the world with 1,872 facilities of one type or another. Many of these are small, general aviation facilities (referred to as aerodromes) with limited capacity. 243 facilities are more substantial and classified as airports with paved primary runways of different lengths, described below. For context, the largest passenger jets in regular commercial service, such as a Boeing 747-400, would (very roughly) require a runway length in excess of 9,000 feet for takeoff when fully loaded.

Number	Airport Primary Paved Runway Length Ranges		As percent
	From	To	
12	9,997	+	5%
32	7,999	9,997	13%
80	5,000	7,995	33%
86	2,999	4,999	35%
33	0	2,999	14%
<b>243</b>			<b>100%</b>

**Table 10: Mexico's Airports with Paved Runways by Length**

The Mexican government includes 76 major airports within the national aeronautical system. Another 1,388 facilities are classified as aerodromes and there are 408 registered heliports. Of the 76 airports in the system, 34 are concessioned to private airport operators. The major airport operating groups are:

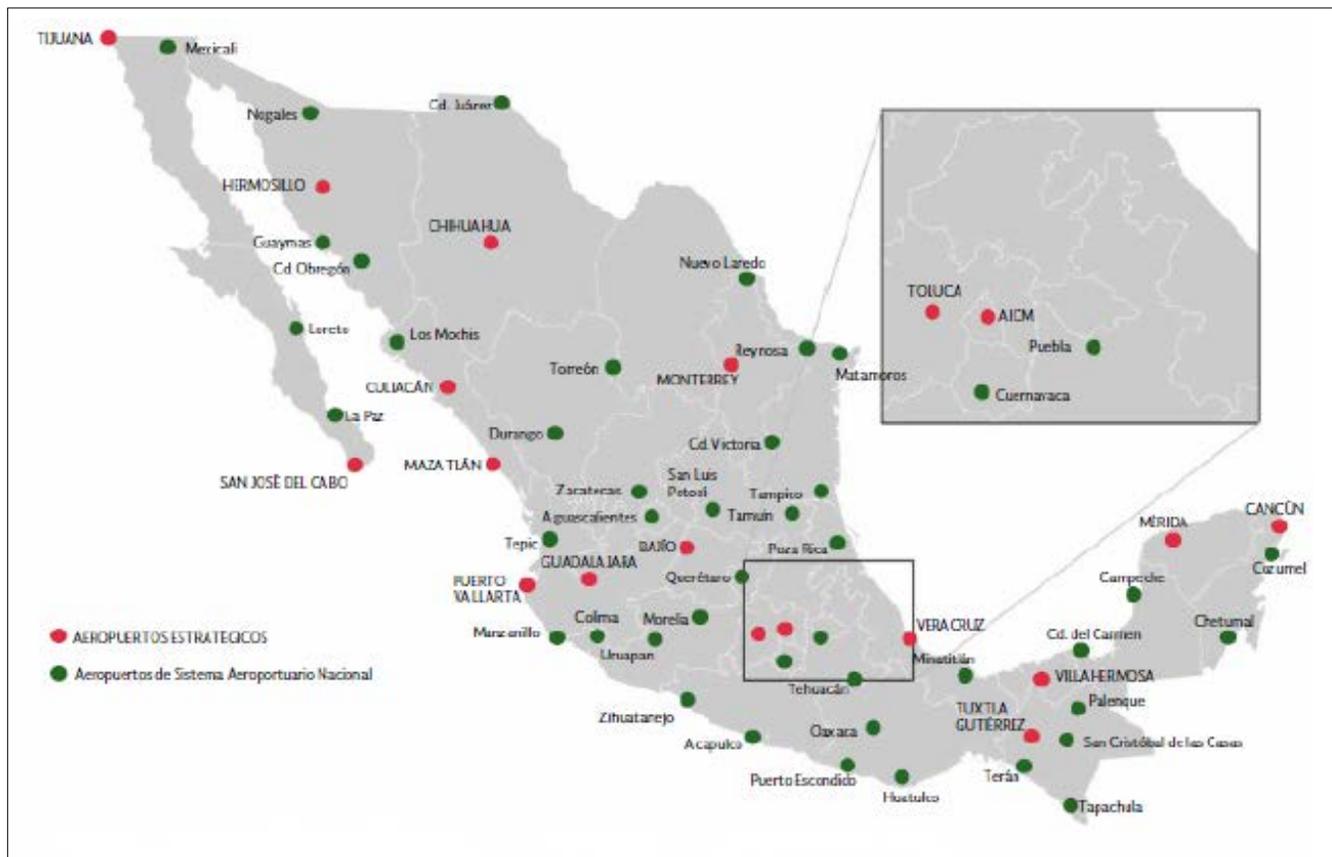
- **ASUR:** Aeropuertos del Sureste operates 9 airports in southern Mexico:
  - Cancún, Cozumel, Huatulco, Mérida, Minatitlán, Oaxaca, Tapachula, Veracruz, Villahermosa.
- **GAP:** Grupo Aeroportuario del Pacífico operates 12 airports in western Mexico:
  - Guadalajara, Tijuana, Mexicali, Hermosillo, Los Mochis, Aguascalientes, Guanajuato, Morelia, La Paz, Los Cabos, Puerto Vallarta, and Manzanillo.
- **OMA:** Grupo Aeroportuario Centro Norte operates 13 airports in the north-central región of the country.
  - Acapulco, Ciudad Juárez, Chihuahua, Culiacán, Durango, Monterrey, Mazatlán, Reynosa, San Luis Potosi, Tampico, Torreón, Zacatecas, and Zihuatanejo.
- **ASA:** 19 airports in the system are operated exclusively by Aeropuertos y Servicios Auxiliares (ASA), a state “decentralized” entity. Another 4 are operated in partnership with ASA. In addition to airport construction and operation, ASA is a primary supplier of aviation fuel and related services through 60 nationwide locations, serves as a provider of technical assistance and consulting to the Mexican aviation industry, and provides training, research and development services. ASA serves as a technical resource to SCT for development of regulation, standards and oversight of Mexico’s airports and aviation sector.
  - **Airports managed exclusive to ASA:** Ciudad Obregón, Colima, Ciudad del Carmen, Campeche, Chetumal, Ciudad Victoria, Guaymas, Loreto, Matamoros, Nuevo Laredo, Nogales, Poza Rica, Puebla, Puerto Escondido, Tehuacán, Tepic, Tamuín, Uruapan. **In partnership:** Cuernavaca, Tuxtla/Palenque, Toluca, Querétaro. On April 10, 2014 ASA was granted the 50 year concession to operate and develop the existing Hermanos Serdán International Airport, located adjacent to the city of

Tlaltenango in the state of Puebla. This is an evolution of a previous concession in which ASA was a minority partner with the state.

ASA has set quantitative performance goals in its Institutional Program for 2013 - 2018 to increase service operations from 39,000 to 43,000 and to double the number of certified civil aerodromes from 8 to 16.

- **AICM:** Mexico City's Benito Juarez International Airport (AICM) is operated by an independent state-owned company, Grupo Aeroportuario de la Ciudad de Mexico or GACM. AICM was declared an international airport in 1943. By the 1990's, the airport was facing the challenges of tremendous growth. In 1994, the general aviation operations were moved to the Toluca Airport. Beginning in 2001, SCT, AICM and ASA collaborated to undertake a wide-ranging major investment program ultimately intended to increase the airport's capacity from 20 million to 32 million annual passengers. Operating company AICM SA de CV is a sister company to Servicios Aeroportuarios de la Ciudad de Mexico SA de CV (SACM), these are both subsidiaries to the holding company GACM. GACM was founded in 1998, and is a majority state-held enterprise with the mission of carrying out a 50-year concession to administer, operate, expand and develop AICM. In 2013, GACM reported USD \$319 million in operating expenses. In 2012 28.7 million passengers were transported through the airport, placing it as the 52<sup>nd</sup> largest airport in the world by passenger volume, while it ranked 22<sup>nd</sup> by number of takeoffs and landings. By 2013, passenger volume had increased to 31.5 million. AICM ranked 50<sup>th</sup> in the world by cargo volume in 2012, moving 403,885 tons of cargo. AICM is the largest of the Mexican airport operating groups as measured by total passengers per year, by number of takeoffs and landings and by tons of cargo transported.

18 other airports are managed by state or municipal governments. Mexico has organized the five airports in the vicinity of Mexico City – AICM, Toluca, Puebla, Cuernavaca, and Querétaro – into a group called the Metropolitan Airport System. This grouping was developed in the interest of managing the rising congestion at AICM by distributing some air traffic to the nearby airports with additional capacity. Mexico's system is served by 21 major international airline carriers. There are a total of 10 domestic carriers operating a fleet of 258 aircraft. The largest of these Mexican carriers are companies Aeroméxico, Interjet, VivaAerobus, and Volaris



**Figure 21: Map of the Mexican National Airport System**

Airline traffic is heavily concentrated within the system. In 2012 88 percent of the 86.4 million passengers transported were handled by only 17 airports, and of those AICM accounted for 34 percent of passengers transported. 98 percent of 747,000 tons of cargo transported passed through these same 17 airports.

## Role of SCT and DGAC

Within the Mexican government the General Directorate of Civil Aeronautics (DGAC) of the Secretariat of Transportation has held responsibility for the development and oversight of the Mexican aviation system. The Directorate has multiple divisions including airports, security, technical (standards setting), air traffic control, international, civil aviation affairs and accident investigation. Within this agency the Division of Airports has held the responsibility for development of airport infrastructure, services and aviation-sector concessions.

In 2014 the Directorate is being converted to what is referred to as a “decentralized administrative organ” that will be called the Federal Civil Aviation Agency. This new structure will give the agency some administrative autonomy in resolution of matters under its jurisdiction, such as standards setting. It will still be a component of SCT, without its own property and only shall exercise legal authority on behalf of SCT, not independently.

## Air Traffic Control (SENEAM)

Within SCT, the Servicios a la Navegación en el Espacio Aereo Mexicano (SENEAM) is responsible for managing Mexico’s airspace. SENEAM operates and manages the national air traffic control system, including radars, radio

navigation aids, telecommunications networks, and provides meteorology services and a range of information products to aviators. This unit of SCT is responsible for the following specific infrastructure:

<b>Air Navigation System Asset</b>	<b>#</b>	<b>Control Units/Networks</b>	<b>#</b>
Remote air-to-ground stations	41	Air traffic control centers	4
Microwave channels	370	Approach control units	39
Satellite ground stations	34	Aerodrome control towers	58
VOR radio beacons	80	Flight information services	43
Distance measuring equipment (DME)	102	Aviation telecommunications centers	4
Non-Directional radio beacon (DME)	102	Subcenters	12
Instrument landing systems (ILS)	22	Weather analysis and prediction centers	1
Primary radar systems	8	Weather observation stations	60
Secondary radar systems	28		
Surface radar system	1		

**Table 11: SENEAM Air Traffic Control and Communications Major Assets**

In 2013, SENEAM's operating expenditures were USD \$161 million. In 2014, they project USD \$181.6 million in operating expenditures and an additional USD \$169.5 million in capital spending. Historically 70 percent of SENEAM's capital spending has been on radar and radar data processing systems, 13 percent on radio navigation aids, and 16 percent on communications systems. SENEAM has had their program for modernization and maintenance of air traffic control systems approved by SHCP. The components are identified in the table below. Most of these items are components of SENEAM's strategic investment plan through 2025. Many are reflecting a single year of multi-year investment projects.

Investment Component	Cost, USD
Uninterruptible power supplies for systems and equipment of capacities (#): 40kVA (3); 30kVA (1), 6kVA (6)	\$ 192,308
Emergency electricity generators to supply systems and equipment of various capacities.	269,231
Acquisition of a Ground-Based Augmentation System (GBAS)	4,230,769
Modernization of the secondary monopulse surveillance radar system for Cerro de las Rusias, Durango, and the Hermosillo Intl. Airport in Sonora.	2,804,308
Acquisition of two 360° air traffic control tower simulators including installation, training, an operational startup support.	2,692,308
Additional Voice Communication System stations (VCS 5.0) for the Arrival Master and Sector 8 Control Center in Mexico City.	215,385
Acquisition of 4 VOR/DME systems for the stations of Pachuca, Hidalgo; Puebla; San Jose del Cabo BCS; and Monclova in Coahuila, and two ILS system for the stations at Mexico City and Tuxtla Gutierrez.	2,800,000
Acquisition of two high frequency air-to-ground communications systems for the air traffic control centers in Mazatlán and Mérida.	269,231
Acquisition of two protective radomes for the radar antennae of the Airborne Collision Avoidance (ACA) and PVR.	753,846
Acquisition of a ground station for Torreón.	269,231
Acquisition of two Disaster Recovery Systems for the radar and flight plan data processing systems for the air traffic control centers at Monterrey and Mérida.	10,769,231
Modernization of the information technology support systems in control towers (funcionalidad de tiras electronicas)	947,692
Gate X communication systems for the Zacatecas air traffic control center.	197,223
Modernization of the primary and secondary monopulse surveillance radar systems, with meteorology channels, at the the Guadalajara airport.	2,369,231
Modernization of the data processing system for radar and flight plan data at the air traffic control center in Mexico City with functionality for automated arrival/departure management (AMAN/DEMAN) for AICM.	1,615,385
Modernization of the primary and secondary monopulse surveillance radar systems, with meteorology channels, at Cerro del Peñon in Mexico City, and the secondary monopulse radar system at Puerto Peñasco in Sonora.	2,692,308
Updating of the communications systems at the approach control centers at Hermosillo and Chihuahua.	991,238
Acquisition of three radio links.	421,077
Ground-to-air communications equipment for the control towers and service units of Culiacán, Hermosillo, and Tijuana.	538,462
Management equipment for the air traffic control and service engineering units.	269,231
Acquisition of furniture and equipment for the air traffic control and service engineering units.	269,231
<b>Total</b>	<b>\$ 35,576,923</b>

**Table 12: SENEAM 2015 Investments in Air Traffic Control and Communications Systems**

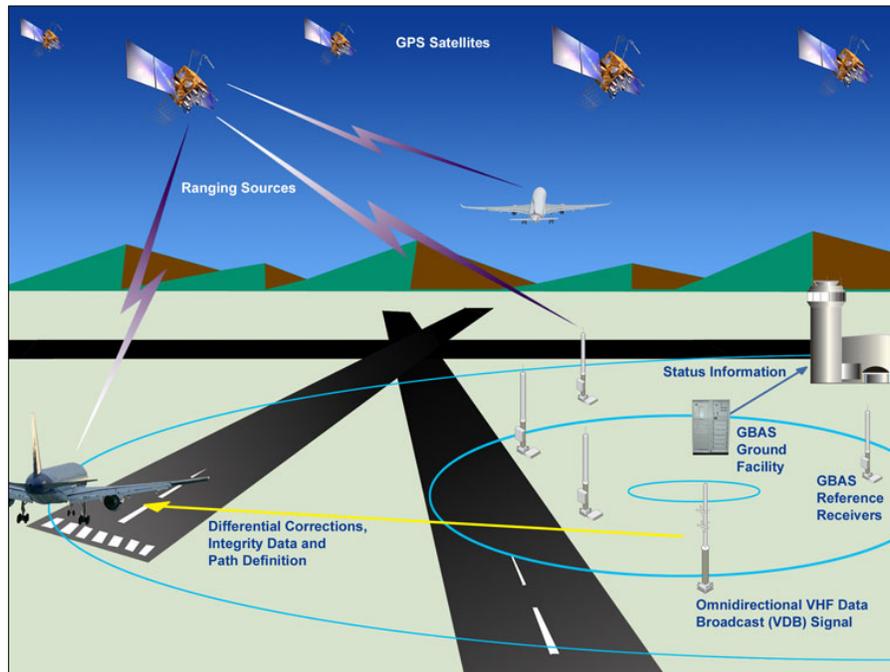


Figure 22: Configuration of a Generic GBAS System

Airport	Operator						Total	As %	Cum. %
	AICM	GAP	ASUR	OMA	SOC.	ASA			
MEXICO CITY	31,532,331						31,532,331	33.9%	34%
CANCUN			15,962,162				15,962,162	17.1%	51%
GUADALAJARA		8,104,762					8,104,762	8.7%	60%
MONTERREY				6,417,755			6,417,755	6.9%	67%
TIJUANA		4,255,235					4,255,235	4.6%	71%
SAN JOSE DEL CABO		3,234,287					3,234,287	3.5%	75%
PUERTO VALLARTA		2,591,035					2,591,035	2.8%	77%
MERIDA			1,316,242				1,316,242	1.4%	79%
HERMOSILLO		1,276,201					1,276,201	1.4%	80%
CULIACAN				1,252,235			1,252,235	1.3%	82%
TOLUCA					1,161,064		1,161,064	1.2%	83%
VILLAHERMOSA			1,014,445				1,014,445	1.1%	84%
VERACRUZ			1,010,814				1,010,814	1.1%	85%
BAJIO		975,873					975,873	1.0%	86%
CHIHUAHUA				885,659			885,659	1.0%	87%
TUXTLA GUTIERREZ (AAC)					855,073		855,073	0.9%	88%
MAZATLAN				731,297			731,297	0.8%	89%
CD. JUAREZ				702,904			702,904	0.8%	89%
ACAPULCO				617,079			617,079	0.7%	90%
Remaining 41 Airports	-	2,203,110	1,775,993	2,685,544	347,189	2,232,328	9,244,164	9.9%	100%
<b>Subtotal</b>	<b>31,532,331</b>	<b>22,640,503</b>	<b>21,079,656</b>	<b>13,292,473</b>	<b>2,363,326</b>	<b>2,232,328</b>	<b>93,140,617</b>	<b>100%</b>	
As %	34%	24%	23%	14%	3%	2%	100%		
Cumulative %	34%	58%	81%	95%	98%	100%			

Table 13: Mexico's Top 60 Airports by 2013 Passenger Traffic and Operator

The 17 largest airports, considered the strategic airports, are well connected to the trunk road network. The government's strategic development objectives for this sector include:

- **Capacity Expansion in the Valley of Mexico:** The country will develop long-term solutions to the steadily increasing demand for airport services in the Valley of Mexico, in particular by expanding capacity at Mexico City International Airport. AICM was declared at full capacity in 2012. This inability to handle more traffic at the country's largest airport impacts national competitiveness. The present congestion creates significant safety concerns.
- **Reducing Air Logistics Costs:** The supervision of the development of the national carriers will improve, and more bilateral international air transport agreements will be established. Generally costs should be lowered, frequency of service increased and quality of service improved.
- **Improving Safety:** This will be accomplished by aligning the certification of airports with strict international standards, improved training of pilots and air traffic controllers, investments in traffic control systems, and stricter implementation of safety procedures.
- **Support Regional Development:** This will be accomplished by investments in the network of regional airports managed by ASA and by increasing interconnections across the system.

The government has set two primary quantitative goals to be achieved by 2018. Air passenger-kilometers travelled should increase from 4.9 million per month in 2012 to 162 million. Available air seat-kilometers should increase from 1.8 billion per month to 2.2 billion per month.

## Master Airport Development Programs

The three private airport groups (ASUR, OMA and GAP) are required to periodically negotiate Master Development Programs (PMD in Spanish) with SCT that outline a five-year plan of management and investment for their airport properties. These five-year plans are a component of the concession agreements with the federal government. They are based in part upon traffic projections for a fifteen year period, and set tariff levels that the operator may charge and capital investment levels that the operator is obligated to make during the period. PMD's include subsidiary development plans for each airport property and define budgets associated with the specific capital project to be performed. Generally, any major construction, renovation, or expansion of any airport must be made in accordance with the operators PMD as approved by SCT.

Airport	PMD Spending	Year									
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Aeropuertos del Sureste (ASUR)	\$ 535,678,070 *										
Grupo Aeroportuario del Pacifico (GAP)	\$ 457,460,029 **										
Grupo Aeroportuario del Centro Norte (OMA)	\$ 239,056,717 *										

\* Company release

\*\* Press report

**Table 14: Timing of Private Airport Operators' 5-Year Development Plans**

### ASUR PMD

The ASUR Master Development Plan for 2014 – 2018 was approved in January of 2014. Total committed capital spending is planned to exceed USD \$535 million, with a breakdown by airport provided in the following table:

ASUR Airport	2014	2015	2016	2017	2018	Total
Cancun	61,063,290	172,302,320	108,402,778	66,003,858	16,560,053	\$ 424,332,299
Veracruz	15,065,684	13,525,568	587,074	465,084	404,090	\$ 30,047,500
Merida	5,001,563	13,853,415	6,823,779	2,958,242	297,349	\$ 28,934,347
Cozumel	1,890,835	4,635,595	1,677,353	4,681,341	449,836	\$ 13,334,960
Villahermosa	2,699,014	3,743,548	3,926,532	426,963	892,047	\$ 11,688,104
Huatulco	4,132,389	4,170,511	449,836	571,825	487,957	\$ 9,812,518
Oaxaca	693,814	2,188,184	2,821,004	1,014,036	442,211	\$ 7,159,249
Minatitlan	3,148,850	1,860,337	785,306	144,862	312,598	\$ 6,251,954
Tapachula	1,090,280	1,928,956	175,360	327,846	594,698	\$ 4,117,140
<b>Total</b>	<b>\$ 94,785,718</b>	<b>\$ 218,208,434</b>	<b>\$ 125,649,021</b>	<b>\$ 76,594,058</b>	<b>\$ 20,440,839</b>	<b>\$ 535,678,070</b>

**Table 15: ASUR Airports Projected Capital Spending 2014 -18**

ASUR has made preliminary estimates of capital investment by airport through 2028:

ASUR Airport	2019-23	2024-28
Cancun	\$ 110,766,322	\$ 102,585,412
Merida	12,107,442	7,959,805
Huatulco	11,101,030	7,182,122
Veracruz	8,447,762	9,812,518
Oaxaca	8,028,424	6,465,435
Villahermosa	7,853,064	10,140,364
Cozumel	4,681,341	9,835,391
Tapachula	2,782,882	4,673,717
Minatitlan	2,302,549	4,932,944
<b>Total</b>	<b>\$ 168,070,815</b>	<b>\$ 163,587,707</b>

**Table 16: ASUR Airports Long-Range Capital Spending Projections**

## GAP PMD

GAP's Master Development Plan for 2010-2014 required USD \$211 million in investments. The following tables break out these investments by airport:

GAP Airports	2010	2011	2012	2013	2014	Total
Guadalajara	7,787,799.54	15,023,750	10,573,655	16,037,024	13,069,328	62,491,556
Los Cabos	11,530,432.53	26,102,059	14,653,970	2,898,009	2,348,295	57,532,766
Puerto Vallarta	8,640,505.04	14,225,711	7,052,509	1,845,089	1,662,105	33,425,918
Tijuana	7,374,331.92	12,771,903	2,081,748	632,820	261,667	23,122,470
Guanajuato	1,014,875.08	2,703,894	2,873,383	495,200	228,730	7,316,082
Hermosillo	1,385,570.19	1,881,304	983,539	154,926	1,014,036	5,419,376
Los Mochis	1,021,660.73	632,820	1,471,496	1,899,222	205,857	5,231,055
Manzanillo	1,163,473.34	205,933	833,340	2,682,698	127,250	5,012,695
La Paz	167,735.34	213,481	648,068	3,148,087	209,669	4,387,042
Morelia	1,075,488.53	783,019	1,026,845	210,279	48,338	3,143,970
Mexicali	587,073.70	526,079	556,195	814,584	128,089	2,612,021
Aguascalientes	482,544.09	369,475	110,553	544,682	41,934	1,549,188
<b>Total</b>	<b>\$ 42,231,490</b>	<b>\$ 75,439,428</b>	<b>\$ 42,865,301</b>	<b>\$ 31,362,621</b>	<b>\$ 19,345,298</b>	<b>\$ 211,244,139</b>

**Table 17: GAP Airports Master Development Plan 2010 - 2014 Investments**

And by type of investment:

Investment	2010	2011	2012	2013	2014	Total
Terminals	7,511,341.20	34,542,273.12	21,784,627.82	12,554,914.26	7,770,263.57	84,163,420
Runways and Aprons	18,412,156.24	25,013,380.71	10,730,716.15	11,017,238.62	8,045,425.78	73,218,917
Machinery and Equipment	8,970,409.96	6,381,567.41	4,775,120.27	2,966,018.34	2,533,184.91	25,626,301
Other	7,337,582.63	9,502,207.24	5,574,836.65	4,824,449.71	996,424.19	28,235,500
<b>Total</b>	<b>\$ 42,231,490</b>	<b>\$ 75,439,428</b>	<b>\$ 42,865,301</b>	<b>\$ 31,362,621</b>	<b>\$ 19,345,298</b>	<b>\$ 211,244,139</b>

**Table 18: GAP Airports Investments by Category 2010 - 2014**

The GAP Master Development Plan for 2015 – 2019 was to be presented to SCT in June of 2014 for approval, with the company anticipating completion of negotiations with SCT by the end of 2014 or early 2015. According to press quotes from company executives, the 2015 – 2019 PMD proposes investments exceeding USD \$457 million, more than doubling investments under the previous PMD. Nearly USD \$182 million of this is proposed for the expansion of the Miguel Hidalgo Airport in Guadalajara.

## OMA PMD

OMA is in the fourth year of its Master Development Plan for 2011-2015, which obligates the company to make approximately USD \$209 million worth of investments across its system of airports. The schedule of investments by airport is as follows:

OMA	2011	2012	2013	2014	2015	Total
Mazatlan	20,747,642.17	6,961,321.75	18,757,919.78	19,049,931.76	9,091,484.38	74,608,300
Chihuahua	4,202,609.05	4,257,123.03	7,016,293.20	5,471,679.41	4,229,751.68	25,177,456
Acapulco	2,355,309.20	4,584,283.20	4,404,425.16	8,900,494.82	2,427,664.13	22,672,177
Monterrey	1,522,045.76	2,175,908.63	3,809,117.18	7,911,085.02	2,209,989.40	17,628,146
San Luis Potosi	1,509,694.34	1,617,883.64	4,279,919.79	3,916,849.02	3,257,420.38	14,581,767
Ciudad Juarez	1,369,635.33	2,841,741.70	6,806,928.99	1,486,592.61	1,207,237.02	13,712,136
Zihuatanejo	1,377,412.15	3,579,700.97	2,022,049.57	3,835,344.89	2,095,319.42	12,909,827
Tampico	2,485,151.61	3,596,093.29	3,484,778.02	1,369,864.06	1,041,026.54	11,976,914
Culiacan	1,859,422.53	2,837,014.62	4,249,117.48	1,127,486.49	815,270.02	10,888,311
Reynosa	2,575,957.43	2,994,762.08	2,698,251.74	1,960,292.47	486,889.96	10,716,154
Torreon	2,428,655.30	1,055,512.77	2,758,941.44	1,954,269.25	327,312.65	8,524,691
Zacatecas	1,407,833.24	3,022,133.44	2,027,157.88	813,287.69	884,880.18	8,155,292
Durango	2,859,506.40	1,735,374.62	927,576.45	1,686,273.91	296,815.32	7,505,547
<b>Total</b>	<b>\$ 46,700,875</b>	<b>\$ 41,258,854</b>	<b>\$ 63,242,477</b>	<b>\$ 59,483,451</b>	<b>\$ 28,371,061</b>	<b>\$ 239,056,717</b>

Table 19: OMA Airports Master Development Plan Investments 2011-15

And by broad categories of investments:

Investment	2011	2012	2013	2014	2015	Total
Terminals	3,961,985	6,083,761	14,175,695	18,076,914	5,451,017	47,749,373
Runways and Aprons	5,773,679	11,888,471	22,010,308	20,028,134	11,860,109	71,560,701
Machinery and Equipment	12,056,207	5,813,555	14,723,122	10,637,471	4,123,545	47,353,899
Baggage Screening	11,429,791	1,214,175	524,859	247,257	4,206,802	17,622,885
Security	3,903,430	10,738,950	4,589,087	3,380,935	1,589,292	24,201,694
Other	9,575,782	5,519,941	7,219,405	7,112,741	1,140,295	30,568,165
<b>Total</b>	<b>\$ 46,700,875</b>	<b>\$ 41,258,854</b>	<b>\$ 63,242,477</b>	<b>\$ 59,483,451</b>	<b>\$ 28,371,061</b>	<b>\$ 239,056,717</b>

Table 20: OMA Airports Investments by Category 2011 - 15

## PNI Projects

In support of achievement of these goals, the Government of Mexico has included 20 significant aviation projects in the National Infrastructure Plan (PNI) with an estimated total investment of USD \$276 million. This amount does not include investments associated with capacity increases at AICM. The level of readiness of these projects varies.

### Expansion of the Mexico City Airport

The Aeropuerto Internacional de la Ciudad de Mexico (AICM) is the primary airport in Mexico, accounting for 35 percent of air passenger trips. With two passenger terminal buildings and two non-simultaneous primary runways AICM transports 32 million travelers per year in the course of 389,000 operations (takeoffs or landings). The facility has a technical limit of 394,000 operations per year, and began reaching its saturation point dozens of times per year by 2012, forcing diversion of flights.



**Figure 23: Aeromexico's inaugural operation of the Boeing 787 Dreamliner at AICM**

A new airport master plan, developed by British consultancy Arup, envisions a mega-project beginning as soon as 2014, on nearby government-held land on the Texcoco Lake bed. In November of 2013, AICM and ASA began the process of selecting the architect-engineering consortium for the project. Eight Mexican and eight international companies were invited to bid, forming eight competing teams. On September 2, 2014 the team of Arq. José Fernando Romero Havaux and Foster + Partners of London was announced as the winner.

The project scope is broken into two planned phases. Phase 1 will see the construction of a new terminal building and 3 parallel runways capable of simultaneous operation. Two of the runways will be for commercial traffic and the third for non-commercial. The service apron will have 95 gates and 42 remote parking and servicing positions. Covering 10,947 acres (~17 square miles), Phase 1 will have the capacity to support 550,000 flight operations per year and a throughput of 50 million passengers. The new terminal will be of a singular design covering 5.9 million square feet. Construction of this phase is projected to be completed by 2020 and to meet traffic demand through the year 2028.

The new airport design incorporates a wide range of environmentally-friendly features, including a 100 percent sourcing of electricity from renewable sources, onsite solar and biogas energy generation (sourced from the NEZA II and III landfills just south of the project site), and advanced technologies for the efficient use and recovery of water resources. The facility structures are planned to meet the U.S. Building Council's Leadership in Energy & Environmental Design (LEED) Platinum standard.

Sources of Project Funds		Uses of Project Funds	
Federal Funds	USD \$7,538,461,538	USD \$361,538,462	Social Projects
		1,576,923,077	Hydraulic Works (Lakes, Tunnels, and Canals)
		1,261,538,462	Design, Engineering, and Project Management
		9,800,000,000	Airport Infrastructure (Terminal, Control Tower, Runways and Auxiliary Components)
Private Sources (Operating Cash)	5,461,538,462		

Sources of Project Funds		Uses of Project Funds	
Flow, Bonded Debt)			
<b>Total</b>	<b>USD \$13,000,000,000</b>	<b>USD \$13,000,000,000</b>	<b>Total</b>

**Table 21: New Mexico City Airport Sources and Uses of Funds**

The terminal building itself will be the largest gridshell structure in the world, with spans exceeding 550 feet. The single structural footprint is designed to enable passenger movement without mechanisms needed to transfer between terminals, such as shuttle trains or buses. The terminal will minimize changes of level for passengers, and all service functions will occur from beneath the building. The design will be such that heating and cooling can be accomplished through displacement ventilation for the majority of the year. Rainwater collection, solar harvesting and shading are integrated into the design of the structure.



**Figure 24: Gridshell Structure Planned for the New AICM Terminal Building**

The water management plan is fundamentally integrated into the design to mitigate the hydrologic impact of the new facility on the region, and to address selected persistent water management and drainage problems in the airport area. This plan includes the capacity to treat 492 gallons per second of water through 24 discrete treatment plants, 90 miles of new works to control and canalize wastewater, water storage capacity of 38 million cubic meters, and 24 miles of large storm drain tunnels.

The financing plan accounts for the approximately USD \$6 billion of private funding to be raised from the following sources across three phases:

- **Financing Phase 1:** Initial round of private bank financing of USD \$1 billion will support construction initiation, closing in the 4<sup>th</sup> quarter of 2014 with the final disbursement occurring in the 3<sup>rd</sup> quarter of 2015.
- **Financing Phase 2:** A road show is planned to attract at least USD \$1.5 billion in private equity, closing in the 2<sup>nd</sup> quarter of 2015, with the ultimate disbursement of funding in the 4<sup>th</sup> quarter of 2016.
- **Financing Phase 3:** This phase of financing will consist of debt financing split between project/facility bonding sources and loans and guarantees provided through the Inter-American Development Bank and the Overseas Private Investment Corporation (OPIC). This financing round is expected to close in the 1<sup>st</sup> quarter of 2016 with the ultimate disbursement of funds raised occurring in the 4<sup>th</sup> quarter of 2016.

Phase 2, (the maximum development of the airport site) would see an additional 3 runways added for a total of six runways capable of simultaneous operations. This full expansion would support an additional 450,000 operations per year and 70 million additional passengers per year.



**Figure 25: Concept of the New Mexico City Airport and Terminal Building**

The project envisions very significant development opportunities on adjacent land, including repurposing of the old airport and structures, for business, technology and research purposes. Approximately 86 miles of new construction or major rehabilitation of roads is under study to accommodate the new vehicular traffic patterns that the airport will change or create.

#### *Opportunities for U.S. Companies*

This megaproject should create significant opportunities for U.S. firms. Construction and engineering services and basic infrastructure materials are expected to have a heavy share of local content. However a wide range of

systems and sophisticated equipment can potentially be sourced from the United States, areas such as lighting, navigation, communication, and information technology will be of particular interest. Participation in financing presents a significant opportunity for the U.S. financial sector. The renewable energy generation components, and energy efficient-components of the design are an area where U.S. firms are competitive. U.S. firms are strong in the area of fuel storage and management, and this facility will require significant infrastructure in this area to power aviation assets and ground vehicles. Opportunities will exist for ground equipment and maintenance equipment and systems. The water works will present opportunities in the area of equipment for control, monitoring and sensing, pumps, and water treatment. Competition is expected to be fierce in the area of systems and equipment, with major European and Asian firms as likely actors seeking to be suppliers.

AICM maintains a formal register of pre-qualified vendors. Registration requires provision of a substantial amount of documentation including historical financial data, organization charts, lists of past and present Mexican government contracts, CV's of key personnel, equipment inventories, and documentation from the taxation authority. This project has its own website hosted by the Government of Mexico at:

<http://www.aeropuerto.gob.mx>

### Other PNI Aviation Projects

- **Expansion of general aviation facilities at the Hidalgo Airport (CG-079):** USD \$90 million in projected investment. (State: Hidalgo; Operator: Ayuntamiento de Pachuca) ASA has funds budgeted to carry out the pre-investment studies for this project in 2014.
- **Runway extension at Lazaro Cardenas/New Airport:** USD \$76 million in investment was projected in the PNI. (State: Michoacan) for a scope including expansion of the existing runways. Due to scope changes this number is likely to increase. ASA has budgeted USD \$3.7 million in 2015 for a pre-investment study for a completely new airport in Lázaro Cárdenas. This study emerged from the agreement between the federal government and the State of Michoacán in 2013 whereby the development of a major multimodal logistics platform centered around the marine port would be developed, including investments in adjacent aviation infrastructure. The planning process was further articulated under the new “Plan Michoacán” in early 2014. Initial reconnaissance of the proposed PNI project to expand the existing airport under this mandate found numerous challenges. The present airport serviced 22,300 passenger in 2013, with a capacity of 20 landings or takeoffs per hour under VFR flight rules. The infrastructure is below standard in many respects, and the airport does not provide adequate capabilities for either current or projected traffic. Fundamental limitations on runway size, safety areas and aprons prevent the airport from handling larger aircraft. The present airport site itself is constrained from growth because it is surrounded by the urban area. The decision was made to abandon the expansion concept and focus on planning for a relocation of the airport that will allow construction of a completely new facility to modern standards and with room for future expansion. This comprehensive planning study will include the following components listed in the table provided. The point of contact at ASA for this project is Arq. Raúl Pulido Guzmán, Chief of Construction Projects at ASA, [rpulidog@asa.gob.mx](mailto:rpulidog@asa.gob.mx), telephone: +52 (55) 5133-2987. The study is planned to take place in January through November of 2015.

Study Component	Budgeted
Financial feasibility: benefit-cost analysis	\$ 70,948
Siting: topographic evaluation and surveys	119,725
Geotechnical studies	133,028
Hydrology	133,028
Airport Master Plan	106,422
Environmental impact study	532,110
Operating plan and facility layout	354,740
Passenger terminal study	221,713
Administrative offices study	31,040
Parking study	44,343
Road planning	133,028
Grounds and landscaping planning	88,685
Telecommunications and electrical power study	399,083
Planning of warehouses and cafeteria	44,343
Water infrastructure study	88,685
Operational lighting study	44,343
Signage and signaling study	66,514
Control tower and general aviation annex study	133,028
Fire station and equipment study	177,370
Fuel point study	221,713
Customs facilities plan	354,740
Waste management facilities study	22,171
Perimeter fencing study	44,343
Perimeter road study	133,028
<b>Total</b>	<b>\$ 3,698,165</b>

**Table 22: 2015 Planning Study Components for the New Airport at Lázaro Cárdenas**

- **Completion of the Palenque Airport including runways and terminal modernization:** USD \$18 million in projected investment. This project began in 2010, the airport was inaugurated in February of 2014 and the first flight was performed on March 13, 2014. (State: Chiapas; Operator: ASA). The 20 year concession for development and operation of this airport was granted by SCT on April 28, 2014 to the joint venture of the government of the State of Chiapas (51 percent) and ASA is the shareholders in the operating company of the “Ángel Albino Corzo International Airport”. This airport is classified as an aerodrome and approved for operations of jets as large as the Boeing 767-300.
- **Modernization of the Chetumal Airport (CG-164):** USD \$15.5 million in projected investment, according to the PNI. (State: Quintana Roo; Operator: ASA) ASA’s 2014 budget included USD \$785,000 towards capital expenditures at this airport.
- **Expansion of the Monterrey Airport:** USD \$15 million in projected investment.
- **Construction of a new airport in the Isthmus region (CG-210):** USD \$14 million in projected investment in a new airport at Ixtepec in the Isthmus of Tehuantepec. (State: Oaxaca; Operator: ASA) ASA has funds budgeted to carry out the pre-investment studies for this project in 2014. The outcome of the study will determine the final scope, scale and schedule of this project.
- **Completion of the Nuevo Laredo cargo airport (CG-183):** USD \$14 million in projected investment. (State: Tamaulipas; Operator: ASA) This project is included in ASA’s budget for a pre-investment study in 2014 budgeted at USD \$446,000. The outcome of the study will determine the final scope, scale and schedule of this project.

- **Rehabilitation and modernization of the Atlangatepec Airport (CG-251):** USD \$9.3 million in projected investment in the State of Tlaxcala. ASA has funds budgeted to carry out the pre-investment studies for this project in 2014. The outcome of the study will determine the final scope, scale and schedule of this project.
- **Modernization of the El Lencero Airport in Jalapa (CG-220):** USD \$7.6 million in projected investment. (State: Veracruz ; Operator: State Government) ASA has funds budgeted to carry out the pre-investment studies for this project in 2014. The outcome of the study will determine the final scope, scale and schedule of this project. Statements by state officials have indicated a scope and potential investment substantially larger than the amount identified in the PNI, of up to USD \$75 million.
- **Expansion of the Tijuana Airport:** This investment of USD \$5.7 million will expand the terminal and perimeter road. (State: Baja California; Operator: GAP)
- **Expansion of the Puerto Vallarta Airport:** This USD \$5.2 million investment will expand the terminal, satellite buildings and commercial spaces. (State: Jalisco; Operator: GAP)
- **Modernization of the Bajio-Guanajuato Airport:** This USD \$4.3 million investment will expand the baggage and waiting areas. (State: Guanajuato; Operator: GAP)
- **Expansion of the Chihuahua Airport:** This USD \$3.8 million investment will improve the security areas and perimeter road. (State: Chihuahua; Operator: OMA)
- **Expansion of the Hermosillo Airport:** This USD \$1.5 million investment will expand the terminal building. (State: Sonora; Operator: GAP)
- **Expansion of the Culiacan Airport:** This USD \$1 million investment will improve illumination, security and access control systems. (State: Sinaloa; Operator: OMA)
- An additional USD \$1.1 million in total investment will occur through small projects at the airports of **Mazatlan (Operator: OMA), Toluca (Operator: ASA-AMAIT), San Jose del Cabo (Operator: GAP), San Luis Potosi (Operator: OMA), and Merida (Operator: ASUR)**. An expansion of the airport at Toluca is an option reportedly under consideration that is not included in the PNI. This would serve as an interim solution to relieve congestion at AICM, while planning and construction occur for the proposed expansion megaproject. This would reportedly involve construction of a second runway and associated facilities at a cost of over USD \$60 million.

## Barrancas de Cobre Regional Airport

On August 14, 2014 SCT authorized the transfer of USD \$15.4 million to the Government of the State of Chihuahua to complete remaining parts of the second phase and all of third phase of the project to construct the new Barranco de Cobres Regional Airport, located in the city of Creel. This project includes:

- **Phase 2 (Completion of):** Construction of: the control tower; guard booths; entrance wall; street lighting; medium-voltage electrical network and substation; maintenance workshop; communications center; hazardous waste burning facility; terminal commercial spaces; runway navigation lights; hangars; security fencing; storage tanks for Jet A, avgas, and firefighting water; distribution piping for fuel and water; electrical connection for the VOR beacon, and a facility for activities of the Secretariat of Defense. (USD \$7.6 million)
- **Phase 3 (All):** Construction/acquisition of: control tower equipment; fixed and mobile digital network communications equipment; rescue and firefighting equipment; terminal equipment including luggage conveyors, x-ray machines and fire extinguishing system; maintenance and meteorological equipment;

cyclone fencing; perimeter security road; aprons for the isolation and hangar areas; road connection to the airport; access road lighting, and; signage.

Airport operator ASA has a technical advisory role on this project.

## ASA Investment Studies and Plans

As noted in the project descriptions above, several of the PNI projects announced for ASA airports are still under technical and feasibility studies. This means that a substantial degree of uncertainty exists regarding scope, scale and budget of these projects, although they were announced in the PNI with cost figures attached. In some cases, studies may return a verdict that the project should not take place at all. ASA, in its capacity as a technical center of expertise, performs many studies on behalf of SCT for airports for which it does not have an operating role.

In ASA's 2014 budget the following project pre-investment study funds are identified:

- USD \$446,000 to complete studies enabling the completion and initiation of operations of the cargo airport of Nuevo Laredo.
- USD \$1,400,000 total to perform studies for: the construction of the new airport in the Isthmus region (Ixtepec) in Oaxaca; rehabilitation and modernization of the Atlangatapec Airport in Tlaxcala; general aviation at the Hidalgo Airport, and; the modernization of the Lencero Airport in Jalapa. The point of contact for these and the Nuevo Laredo study is Ing. Gilberto Vázquez Alanis, ASA's Chief of Consultancies, [gmvarez@asa.gob.mx](mailto:gmvarez@asa.gob.mx), telephone: +52 (55) 5133-2618.

In 2013 USD \$1,100,000 was budgeted for the 2014 performance of the pre-investment studies for the construction of a new fuel station in San Jose del Cabo, including technical, economic and environmental components. The point of contact for this study is Mauricio Arrellano Villavicencio, ASA's Director of Fuels, [moarellanov@asa.gob.mx](mailto:moarellanov@asa.gob.mx), telephone: +52 (55) 5133-2977.

USD \$337,000 was originally budgeted for master plan developments (PMDs) for the airports at Colima, Matamoros, Ciudad Victoria, and Puebla. At Ciudad Victoria a rehabilitation of the runway is anticipated as a major PMD component. In Colima a terminal expansion is anticipated, and in Puebla there is a need to plan for installing elevators and jetways.

An additional USD \$241,000 was allocated in 2014 to complete the individual Master Development Programs for three airports. At Nogales, in Sonora, plans for internal walkways and a new helicopter apron will be part of this program. At Tehuacán, in San Luis Potosi, an expansion of the terminal building and walkways is expected to be included in that PMD. The PMD for Tamuin in Puebla will include a plan for internal walkways. ASA is required by law to update each airport's PMD every five years.

ASA plans to spend USD \$687,000 in 2015 for inspections and planning studies for rehabilitation and improvements to vehicle gasoline stations in Culiacán, Monterrey, Mazatlán, San Luis Potosí, Tampico, Toluca, Guadalajara, Mexicali, Puerto Vallarta, Manzanillo, Puebla, Querétaro, México, Tuxtla Gutierrez, Tehuacán, Tamuin, Matamoros, Pachuca and Nogales. This planning process will include inspections of underground tanks and piping. The point of contact for this series of studies is Mauricio Arrellano Villavicencio, ASA's Director of Fuels, [moarellanov@asa.gob.mx](mailto:moarellanov@asa.gob.mx), telephone: 51-33-29-77.

SHCP has approved funding totaling USD \$879,000 for ASA to carry out the following project pre-investment studies during 2015:

- Replacement of reflective posts in the commercial aviation area of the Ciudad Victoria airport.
- Expansion of the passenger terminal at the Colima Airport.
- Construction of a fire/rescue station and new access roads and rehabilitation of the cafeteria and warehouse at Nogales Airport.
- Expansion of the general aviation facility at the Guaymas Airport.
- Development of a standardized prototype design for administrative offices for multiple ASA airports.
- Design of the workshops and sheds for the Ciudad Obregon Airport.
- Installation of new fire detection systems at the airports of Ciudad Obregon, Ciudad Victoria, Guaymas, Matamoros, Tepic, and Uruapan.
- Rehabilitation or expansion of the fire stations at the airports of Guaymas, Matamoros, Puebla.
- Replacement of electrical cable installations powering the lighting systems on the runway, taxiway and aprons at the Campeche Airport.
- Construction of an electrical substation for visual aids at the Tehuacán Airport and installation of new lighting systems for runways, taxiways and aircraft parking areas.
- Installation of a VHF omnidirectional range (VOR) and distance measuring equipment (DME) at the Tehuacán Airport to enable aircraft to operate under instrument flight rules (IFR) conditions.
- Rehabilitation of the runway, runway shoulders, taxiway ALFA, the runway safety area, and the commercial apron tarmac at the Tehuacán Airport.
- Replacement of electrical cable installations powering the lighting systems on the runway, taxiway and aprons at the Campeche Airport.

Specific dollar amounts were allocated in the 2014 budget for pre-investment studies for the following proposed future projects:

- Development of the runway safety area (overrun area) and shoulders in Chetumal. **USD \$28,287.**
- Study project to determine appropriate size of the runway safety area and associated works in Colima. **USD \$30,581.**
- New platform lighting system for the general aviation and cargo areas of the airports at Nuevo Laredo and Puebla. **USD \$57,000.**
- New lightning arrestor system and grounding network at Puebla. **USD \$22,900.**
- Rebuilding of the commercial apron, reconfiguration of signaling and roadway at the Campeche Airport. **USD \$30,600.**
- Reconfiguration of passenger pedestrian flows at Poza Rica. **USD \$77,439.**
- Provision of water service to the hangar area in Puebla. **USD \$27,000.**
- Expansion of the general aviation area at the Loreta airport. **USD \$78,000.**
- New cafeteria in Puebla. **USD \$27,000.**
- New warehouse, workshop and sheds at Campeche and Guaymas. **USD \$39,000.**
- New administrative offices at Colima. **USD \$25,000.**
- Update of electrical systems and pneumatic equipment at Tepic. **USD \$16,000.**
- Improvement and expansion of the international passenger terminal at Campeche. **USD \$65,000.**

- Replacement of the reflective posts at the commercial apron at Tepic and Campeche. **USD \$24,000.**

Our observation to United States companies is that identification of the pre-investment studies in progress and planned by Mexican authorities can be a useful source of intelligence on significant procurement opportunities that may emerge in the short to medium-term.

## Selected ASA Budgeted Projects

**New Fuel Storage Tank:** In 2015, ASA will spend USD \$958,500 of internal capital funds to construct a new tank for storage of Jet A fuel increasing total capacity to 500,000 liters at their San Luis Potosi fueling station. The point of contact for this project is Mauricio Omar Arrellano Villavicencio, Director of Fuels at ASA, [moarellanov@asa.gob.mx](mailto:moarellanov@asa.gob.mx), telephone: 51-33-29-77.

**New Fuel Storage Tanks:** The following airports will also have new fuel storage tank capacity added in the period through 2018: Cancún – 2 million additional liters; San José del Cabo – 2 million additional liters; Ciudad del Carmen – 500,000 additional liters; Ciudad Juárez – 160,000 additional liters.

**New Smoke Detection System:** In 2015 ASA will spend USD \$113,000 to equip the Ciudad Obregón Airport with a new smoke detection system. The point of contact for this project is Gonzalo Malfavon Rivero, Chief of Works, [gmalfavonr@asa.gob.mx](mailto:gmalfavonr@asa.gob.mx), telephone: 51-33-10-00 ext. 2939.

**New Offices and Support Buildings at AICM:** Beginning in the 4<sup>th</sup> quarter of 2014 ASA will spend USD \$1.4 million to construct a new fueling station operations office and maintenance workshop at the Mexico City International Airport. The point of contact for this project is Mauricio Omar Arrellano Villavicencio, Director of Fuels at ASA, [moarellanov@asa.gob.mx](mailto:moarellanov@asa.gob.mx), telephone: 51-33-29-77.



**Figure 26: New ASA Fuel Equipment Maintenance Shops and Offices at AICM**

**New Offices and Support Buildings at the Cancún Airport:** Beginning in the 4<sup>th</sup> quarter of 2014 ASA intends to undertake a project at the Cancún Airport that will involve relocation of the testing area for aviation fuel trucks, relocation of ASA's equipment maintenance workshop and parts warehouse, and rehabilitation of the ASA operations offices. This project is budgeted at USD \$1.1 million. The point of contact for this project is Mauricio Omar Arrellano Villavicencio, Director of Fuels at ASA, [moarellanov@asa.gob.mx](mailto:moarellanov@asa.gob.mx), telephone: +52 (55) 51-33-29-

77. ASA's budget for 2014-2015 includes USD \$3.9 million for rehabilitation and relocation of the aviation fuel storage facility at this airport, which will involve transferring at least one large storage tank from Cozumel.

**Security and Safety Equipment:** In 2015, ASA intends to spend USD \$3.1 million on different items of equipment, spread between the airports of Campeche (CPE), Chetumal (CTM), Ciudad del Carmen (CME), Ciudad Obregón (CEN), Ciudad Victoria (CVM), Colima (CLQ), Guaymas (GYM), Loreto (LTO), Matamoros (MAM), Nogales (NOG), Nuevo Laredo (NLD), Poza Rica (PAZ) Puebla (PBC) Puerto Escondido (Oaxaca), Tamuín (TMN), Tehuacán, Tepic (TPQ), and Uruapan (UPN). Acquisitions will include: investments in CCTV and access control systems, both new systems and upgrades of existing systems; self-contained breathing apparatus; computed tomography systems for inspecting checked baggage; explosive trace detection equipment; x-ray machines; metal detectors; and hydraulic rescue equipment (cutters/spreaders). The point of contact for these purchases is Ing. Salvador María Lizana Paulín, Manager of Security at ASA, [smlizanap@asa.gob.mx](mailto:smlizanap@asa.gob.mx), telephone: +52 (55) 51-33-1000 ext. 1081.

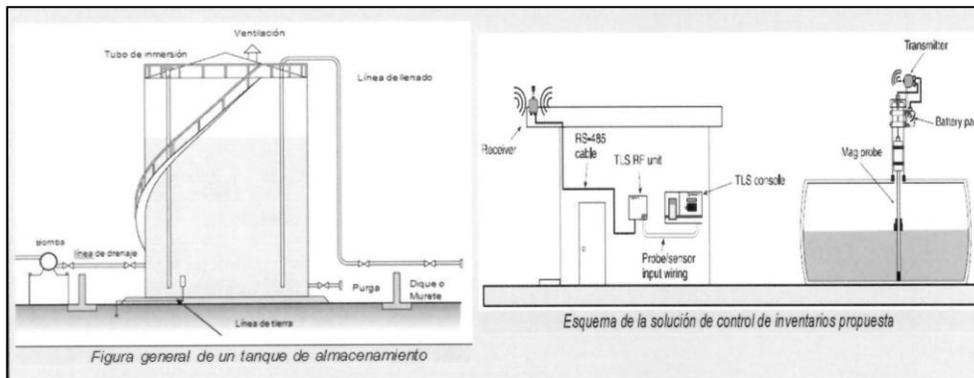
**New Fire and Rescue Vehicles:** In 2015, ASA intends to spend USD \$1.4 million on purchase of a truck and a specialized fire-fighting vehicle. The latter is specified as a VREI-05 as designed by the Querétaro Advanced Technology Center (CIATEQ) using ASA funding. It should be noted the vehicle was specifically designed domestically to meet Mexican government policy goals of import substitution for equipment of this type. Accordingly, the only opportunity for U.S. firm participation – if any – would potentially be as a subcontractor to a Mexican manufacturer. The point of contact for these purchases is Ing. Salvador María Lizana Paulín, Manager of Security at ASA, [smlizanap@asa.gob.mx](mailto:smlizanap@asa.gob.mx), telephone: +52 (55) 51-33-1000 ext. 1081.

**Fuel Spill Containment and Recovery System:** Beginning in the fourth quarter of 2014, ASA will begin a project to rehabilitate the fuel spill containment and recovery system in the fuel storage tank area of the Guadalajara Airport. This project is budgeted at USD \$3 million. This fuel storage area consists of 6 large storage tanks with the capacity to store 12.6 million liters of Jet A fuel and 80,000 liters of avgas, with an average daily flow of 744,000 liters. The point of contact for this project is Mauricio Omar Arrellano Villavicencio, Director of Fuels at ASA, [moarellanov@asa.gob.mx](mailto:moarellanov@asa.gob.mx), telephone: +52 (55) 51-33-29-77.



Figure 27: Overhead of ASA's Guadalajara Airport Fuel Station Containment Project Area

**Implementation of an Aviation Fuel Measurement System:** In 2015, ASA has budgeted USD \$2.5 million to install fuel measuring systems for storage tanks and systems to detect dirt and overfilling for the lines for avgas and Jet-A fuel. These systems are to incorporate wireless communications capabilities. Measurement systems are budgeted at USD \$177,000 each and will be installed in the storage tanks at the airport fueling stations at Villahermosa, Veracruz, Aguascalientes, Los Mochis, Reynosa, and Colima. Dirt and overfill sensor installations are budgeted at USD \$31,000 apiece and will be installed in lines at the fueling stations at the airports of San Jose del Cabo, Mérida, Culiacán, Hermosillo, Bajío, Villahermosa, Chihuahua, Veracruz, Ciudad Juárez, Mazatlán, Tuxtla Gutiérrez, Morelia, Querétaro, Mexicali, La Paz, Acapulco, Cozumel, Aguascalientes, Huatulco, Torreón, Zihuatanejo, Puebla, Tampico, Zacatecas, Los Mochis, Reynosa, Durango, Manzanillo, Tapachula, Minatitlán, Guaymas, Nogales, Tehuacán, Pachuca, Puerto Peñasco, San Luis Potosí, Tamuín, and Colima. Technical planning documents indicate that a specific supplier's solution may have been selected for this acquisition. The point of contact for this project is Mauricio Omar Arrellano Villavicencio, Director of Fuels at ASA, [moarellanov@asa.gob.mx](mailto:moarellanov@asa.gob.mx), telephone: +52 (55) 5133-2977.



**Figure 28: ASA Aviation Fuel System Upgrades Conceptual Diagram**

**Additional Airport Projects:** At ConnectMEX, ASA presented summary budget amounts for capital investment investments as follows:

#### Presidential Commitments

- USD \$2.9 million at El Loreto Airport between 2014 and 2015;
- USD \$21 million at the Puerto Escondido Airport between 2014 and 2017;
- USD \$20 million at the Ciudad del Carmen Airport between 2014 and 2017.

#### Presidential Instructions

- USD \$19 million at the Ojinaga Airport between 2014 and 2016
- USD \$19 million at the Delicias Airport between 2014 and 2016
- USD \$765,000 at the San Luis Potosí Airport in 2015.

Details of the planned investments were not provided.

## USTDA Projects

### **ASA Airport Development and Management Feasibility Study**

In October of 2009, USTDA completed this advisory project for Aeropuertos y Servicios Auxiliares (ASA). The study covers four airports in Mexico: Toluca (TLC), Puebla (PBC), Cuernavaca (CVJ), and Querétaro (QRO). The study had two components. First, it identified U.S. route and carrier combinations that could be likely new service opportunities for the airports. This component included exploratory meetings with selected carriers that would potentially support and market new service. The second half of the project focused on necessary changes to equipment and procedures that would be required to support expanded service to the United States. The study included analyses and recommendations for security and included assessments of developmental and environmental impact.

### **San Luis Potosi International Airport Runway Expansion and Modernization Feasibility Study**

In September of 2009 USTDA completed this feasibility study, prepared for concessionaire OMA as the project sponsor, and performed by a consortium of PBS&J, Infrastructure Management Group, the Texas Transportation Institute and AVILA Consultoria Ambiental. This study analyzed the feasibility to improve SLP's infrastructure in order to alleviate airport congestion, attract additional U.S. and Mexican airline and cargo service, and enhance regional growth. The study incorporated a facility assessment and analysis, a demand study, analysis of capacity expansion requirements; and environmental, financial and trade analyses. An airport development plan was produced complete with cost estimates and a proposed schedule. This study resulted in a proposal for USD \$11.9 million in investments in basic infrastructure improvements, exclusive of property acquisitions and systems.

The studies above are available at USTDA's on-line library at: <http://www.ustda.gov/library>

## Project Contacts

For more information on projects in the aviation sector, please contact:

Project Sponsor(s)	U.S. Trade and Development Agency	U.S. Commercial Service Mexico
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