All three counties were built on trade, tourism and growth.

Infrastructure improvements made it easy for people and goods to arrive, depart and move around.

Four primary components:
1. **Seaports**
   - PortMiami
   - Port Everglades
2. **Airports**
   - Miami International Airport
   - Fort Lauderdale – Hollywood International Airport
3. **Roadways**
   - Interstates I-95, I-595, I-395 and I-195
   - Expressways: Palmetto, Sawgrass, Shula and Dolphin
4. **Rail**
   - FEC (Florida East Coast) and CSX
   - Tri-Rail, Brightline and Coastal Link
What maintains the growth?

- Our global position
  (location, location, location ...)

- Timing
  (An active market plus new methods and patterns of transportation)

- Infrastructure Improvements
  (The movement of people and goods into, out of, and around South Florida)
Our global location

Miami
(and as seen from Asia ... and the other side of the world)
Global Map of Accessibility
(Travel Time by the World Bank)
Global Cruise Passengers, 1995-2018

Source: Cruise Industry News; B&A
Two of the 3 busiest cruise ports in the world are PortMiami and Port Everglades (Canaveral/Orlando is third).

### Competitor Port Passenger Throughput, 2004-2018

### Competitor Port Market Share, 2004-2018

*Source: B&A*
Over $2-Billion in Capital Improvements have been made!

(PortMiami is 518 Acres)
Cruise Capital of the World

22 Cruise lines berthing 55 ships

Fiscal year that ended Sept. 30, 2018
5,592,000 cruise passengers
Royal Caribbean's Terminal A was just completed to bring its new Symphony of the Seas, the world’s largest cruise ship, to Miami.

At maximum occupancy, Symphony can carry 6,680 guests.
Terminal A is the largest and most modern cruise facility in the world and welcomed the first guests from the Mariner of the Seas on Friday.

Norwegian’s new Terminal B will be completed in fall 2019 to coincide with the launch of its newest ship, the Norwegian Encore, which carries 3,998 passengers.

PortMiami’s third new cruise terminal is coming. It will fit MSC’s 7,000-passenger ships.

MSC Cruises' World Class of ships will have capacity for nearly 7,000 passengers at maximum occupancy. The cruise line plans to bring these ships to a new terminal at PortMiami set for completion in October 2022.

- 1,084,000 TEUs of cargo (5.8% increase over 2017)
- 4th year over 1-million TEUs
- The port’s old cargo record of 1.054 million TEUs was set back in 2005.
- First US port of call after the Panama Canal
- Over 220 vessels requiring a 39- ft draft since completion of deep dredge.
What is a TEU?

**OPENING NEW DOORS**

- First Neo-Panamax vessel arrived in July 2016: MOL Majesty
- PortMiami is the closest U.S. East Coast port to the Panama Canal
- Once limited to 4,500 TEU vessels – Post Panama Canal Expansion = 14,000 TEU vessels
- New opportunities for cascading of feeder services

**WHAT is a TEU?**

- Port capacity and productivity is often measured in TEUs
- TEU stands for “Twenty Foot Equivalent Unit”
- Originally containers were 20’ long
- Today, most cargo is moved in 40’ containers
As of June 26, 2018 (2-year anniversary of Canal Expansion

- Transited 3,745 Neo-panamax vessels
- Milestones:
  - Transit of largest cruise ship to date, Norewegian Bliss, carrying 5,000 passengers.
  - Transit of largest capacity container vessel to date, the CMA CGM Theodore Roosevelt with 14,863 TEUs.
  - 358 transits of LNG since June 26, 2016, expected to increase 50% for FY 2018.

Widely regarded as a success.
Only problems reported are cross-winds causing some vessels and their tugs to slam into the edges of the funnel-shaped entrance at Agua Clara. Rubber bumpers have been recommended.

Maximum transits per day is 8, but plans are underway to increase to 10 or more in 2019.
Panama Canal: Third set of Locks

First transit Sunday, June 26, 2016

Aerial view showing the new Panama Canal expansion. Photo courtesy of Panama Canal Authority
Still a tight fit as container ships continue to increase in size.

Source: Photo - Panama Canal Authority, 2017.

A 2015 article in Reuters Business News (and numerous journals since) discusses the Panama Canal Authority initiating efforts to plan and design a fourth set of locks at a price tag of $17 billion. This would allow Panama to compete with Egypt’s Suez Canal.

These locks would be built to accommodate vessels that can hold between 18,000 and 21,000 TEUs.

Another potential project to watch related to trans Central American trade is the proposed $50 billion-dollar Nicaraguan Canal. Although this project is currently stalled (huge environmental hurdles and concerns).

https://www.reuters.com/article/us-panama-canal/panama-canal-sets-sights-on-new-17-billion-expansion-project-idUSKBNO0MMZ20150326
The expanded Panama Canal has been a success for East Coast ports, too.

Shipping directly to the East Coast is becoming cheaper considering all costs.

This past week the Panama Spread (Difference between the cost of shipping a 40’ container from China to the NA West Coast vs the NA East Coast dropped from $1,126 to $856, a 24% drop. Rates to the west coast are increasing while the rates to the east coast are decreasing.
## Increasing Vessel Size and its Impact on Port Infrastructure

<table>
<thead>
<tr>
<th>Vessel: Container Configuration Cross-Section</th>
<th>Vessel: Profile</th>
<th>Ship-to-Shore Gantry Crane</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panamax</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 rows across</td>
<td>3,000 - 5,000 TEU</td>
<td>Example size: Lift height, in feet: 82</td>
</tr>
<tr>
<td></td>
<td>Maximum length/Beam of original Panama Canal locks</td>
<td>Outreach, in containers: up to 16 across</td>
</tr>
<tr>
<td><strong>Post-Panamax</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 rows across</td>
<td>4,500 - 10,000 TEU</td>
<td>Example size: Lift height, in feet: 96</td>
</tr>
<tr>
<td></td>
<td>Maximum length/Beam of new Panama Canal locks</td>
<td>Outreach, in containers: 17 to 19 across</td>
</tr>
<tr>
<td><strong>Neo-Panamax</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 rows across</td>
<td>12,000 - 14,400 TEU</td>
<td>Example size: Lift height, in feet: 115</td>
</tr>
<tr>
<td></td>
<td>Maximum length/Beam of new Panama Canal locks</td>
<td>Outreach, in containers: 20 to 23 across</td>
</tr>
<tr>
<td><strong>Megaship</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 rows across</td>
<td>10,000 - 20,000 TEU</td>
<td>Example Megaship size</td>
</tr>
</tbody>
</table>

All sizes of vessels in a column are to scale with each other, but scale differs between columns.

So PortMiami Completed Major Capital Projects

- **Minus 50/-52 feet Deep Dredge Project** of the Fisherman’s Channel and associated turning basins in partnership with the Army Corp of Engineers, Cost $206M, Completion date Summer of 2015 in tandem with Panama Canal Opening
- **PortMiami Tunnel Project** in partnership with FDOT, Cost $1B ($650M construction/$450M O&M, Completion date May 2014
- **Rail and Intermodal Rail Facility** in partnership with the Federal Government and FEC, Cost $23M, Completion date fall of 2014
- Acquisition of four new **Super Post-Panamax Gantry Cranes**, Cost $40M, Completion date August 2013
- **Bulkhead Improvements** and Wharf Strengthening projects, Cost $57M, Completion date May 2014
Why a “deep dredge”?  

But, there are actually even better reasons ...
Maersk Shanghai
1,069 feet by 159 feet
June 14, 2017
What’s on the horizon

Since Panama Canal opening **Asian cargo has gone up 312%**.
PortMiami has served over 250 PPM ships with a draft of 39’ or greater.

PortMiami dredge was based on a study in 2004 and authorized by Congress in 2007. Dredge was begun in 2013 and completed in 2015 ($205-million). The largest ships were 6,600 TEUs. Now the ships have become larger (13-14,000 TEUs are common) and are not only longer but wider. A NEPA study is planned with the first public meetings on November 7th.

US DOT grant ($7-million) to replace two terminal gates with automated systems. As truck travels toward port **RFID readers** at I-95 and I-395 communicate arrival 15-20 minutes in advance improving handling at terminal yards.

Rail service via FEC now to yard west of MIA and to Titusville (Orlando area)

**RTG cranes** (rubber tired gantry cranes) for South Florida Container Yard.
Alternatives under consideration for the study include:

- no action;
- widening and/or deepening of specific areas within Miami Harbor’s federally authorized channels, including: the Outer Entrance Channel Flare, Outer Entrance Channel, Elbow, Fisherman’s Channel, and Dodge-Lummus Island Turning basin.
Width is a challenge

USACE Hosts Meetings on Miami Harbor Navigation Improvements Study

Super Post-Panamax (Neo-Panamax) Cranes

Cranes:
PortMiami now has 13 cranes including 6 Neo Post-Panamax.

Four more are in procurement including two on order.

Oct 7 2013
Maersk Shanghai
• 1,069 feet by 159 feet
• 10,081 TEUs
• June 14, 2017
• Xiamen, China via Suez Canal
In the next five years, Port Everglades is investing nearly $1 billion in infrastructure improvements to increase cargo volumes.

Expansion projects include
✓ adding **new cargo berths**,
✓ installing new **Super Post-Panamax container gantry cranes**,
✓ increasing the **lift capacity** on existing cranes, and
✓ **deepening and widening** the Port’s navigation channels.

Size of Port Everglades is 2,190 jurisdictional acres including 1,742 upland and 448 submerged acres)
Port Everglades Breaks World Record For Cruise Guests In A Single Day With 54,700 Passengers

8-Ship Cruise Day

Port Everglades Infrastructure Improvement Projects

PEV is 2,190 Acres

[Table with project IDs, names, and statuses]

Southport Turning Notch Extension (STNE) Project

Project will lengthen the existing turning notch from about 900 feet to 2,400 feet allowing for berthing of five cargo ships.
Port Everglades/USACE Harbor Deepening and Widening Project Map

Port Everglades International Logistics Center (PE-ILC)

283,000± Sq Ft on-port third-party (3PL) logistics center / P3
APM Connection to Ft Lauderdale – Hollywood International Airport
$3.2-Billion Capital Improvement Program is Underway

(FLL is located on 1,380 Acres)
Projects Underway

✓ South Runway (completed)
✓ Concourse A in Terminal 1 (completed)
  o Terminals 1, 2, and 3 Modernization
  o Terminal 4 Expansion
✓ Canopies (completed)
✓ Pedestrian Bridges (completed)
FLL operates on a very small footprint compared to other large hubs

**DEN** 33,920 acres
566,035 operations
17 operations per acre

**DFW** 18,076 acres
676,890 operations
37 operations per acre

**IAH** 10,000 acres
479,778 operations
48 operations per acre

**ORD** 7,700 acres
872,332 operations
113 operations per acre

**ATL** 4,700 acres
899,040 operations
191 operations per acre

**LAX** 3,586 acres
685,889 operations
191 operations per acre

**LAS** 2,853 acres
532,979 operations
187 operations per acre

**FLL** 1,400 acres
287,264 operations
205 operations per acre

**SOURCES:** FAA Air Traffic Activity System (ATADS), FFY2016 Operations Data
Potential Landside Redevelopment
Palm Garage and Commercial Center Phase 1 including Hotel

1. Hotel
2. New Palm Garage
3. Commercial Center/Courtyard & Outdoor Space
4. Landside Commercial Transfer Level
5. Airport People Mover Station Connection
Commercial Center Above Palm Garage
Commercial Center

POTENTIAL LANDSIDE REDEVELOPMENT

PHASE 1
Proposed Palm Garage
Redevelopment and Hotel

LONG-TERM EXPANDABILITY
(Dependent on Terminal 3 Redevelopment)
Landside Commercial Center

Palm Garage
9 levels (3,400 Spaces)
Landside Development Strategy

Transportation Modes Comprising Landside Development

- Rental Car
- Parking
- Taxi
- Rail
- Limo
- Ride Sharing

Legend:
- Airport Areas Reserved for Potential Landside Facilities Development
- Reserved for Potential Future Gate Expansion
- On-Airport Roadway Improvements
- Off-Airport Roadway Improvements

Preliminary Draft. For Discussion Purposes Only.
Intermodal Center

Potential Integrated Development (To be further studied) Could include, but not be limited to:

- Multiple Modes of Ground Transportation & Rail
- Public Parking
- Employee Parking
- Bag Tagging/Drop-off for Early Arriving Passengers
- Entertainment
- Office
- Food Service Options
Intermodal Concept

- Flamingo Garage
- Terminal One (SW)
- Potential Office Bldg
- APM (Sky Train)
- Parking Garage
- Retail, amenities & employee services
The Ft Lauderdale – Hollywood International Airport

Master Plan Vision
$6.4 Billion Capital Improvement Program is well underway
More than doubling the terminal and concourses from 3.5 million to 7.4 million SF
$1.7 Billion Central Terminal redesign and renovation is about to commence.

(MIA is on 3,230 Acres of land)
Miami International Freight

• #1 in International Cargo in US (Miami, NY, LA)
• #1 US airport in total carriers
• #3 US airport for international passengers
• #9 in International Cargo World-wide (up one notch from 10)
• #3 in total freight in US (behind only Memphis/FedEx & Louisville/UPS)

* * * * *

• Three Fumigation facilities for perishables
  (Targeting more perishables / repeal of protective regulations prohibiting goods from entering Zone 5/South Florida directly)

• Four International carriers serving MIA-Asia with direct flights and non-stop passenger service is in the planning stages!
FACT: MIA HANDLES 84% OF ALL AIR IMPORTS AND 81% OF ALL AIR EXPORTS BETWEEN THE UNITED STATES AND THE LATIN AMERICAN/CARIBBEAN REGION

### Rankings of Major US Airports 2014 International Freight

<table>
<thead>
<tr>
<th>Rank</th>
<th>Airport</th>
<th>Millions of U.S. Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MIAMI INT’L (MIA)</td>
<td>1.92</td>
</tr>
<tr>
<td>2</td>
<td>Los Angeles Int’l (LAX)</td>
<td>1.15</td>
</tr>
<tr>
<td>3</td>
<td>New York Kennedy (JFK)</td>
<td>1.11</td>
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<tr>
<td>4</td>
<td>O’Hare Int’l (ORD)</td>
<td>1.07</td>
</tr>
<tr>
<td>5</td>
<td>Louisville Int’l/UPS (SDF)</td>
<td>0.47</td>
</tr>
<tr>
<td>6</td>
<td>Hartsfield Atlanta Int’l (ATL)</td>
<td>0.36</td>
</tr>
<tr>
<td>7</td>
<td>Dallas-Ft. Worth Int’l (DFW)</td>
<td>0.35</td>
</tr>
<tr>
<td>8</td>
<td>Memphis Int’l/FedEx (MEM)</td>
<td>0.28</td>
</tr>
<tr>
<td>9</td>
<td>Houston Intercontinental (IAH)</td>
<td>0.28</td>
</tr>
<tr>
<td>10</td>
<td>San Francisco Int’l (SFO)</td>
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<tr>
<td>1</td>
<td>Hong Kong Int’l (HKG)</td>
<td>4.82</td>
</tr>
<tr>
<td>2</td>
<td>Incheon Int’l (ICN)</td>
<td>2.73</td>
</tr>
<tr>
<td>3</td>
<td>Dubai Int’l (DXB)</td>
<td>2.61</td>
</tr>
<tr>
<td>4</td>
<td>Shanghai Pudong Int’l (PVG)</td>
<td>2.57</td>
</tr>
<tr>
<td>5</td>
<td>Chiang Kai Shek Int’l (TPE)</td>
<td>2.28</td>
</tr>
<tr>
<td>6</td>
<td>Tokyo Narita (NRT)</td>
<td>2.25</td>
</tr>
<tr>
<td>7</td>
<td>Frankfurt (FRA)</td>
<td>2.21</td>
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<tr>
<td>8</td>
<td>Charles de Gaulle (CDG)</td>
<td>2.05</td>
</tr>
<tr>
<td>9</td>
<td>Changi (SIN)</td>
<td>2.03</td>
</tr>
<tr>
<td>10</td>
<td>MIAMI INT’L (MIA)</td>
<td>1.92</td>
</tr>
</tbody>
</table>
Cargo Optimization, Redevelopment and Expansion (CORE) Plan
So, not this:
MIA – Pharmaceutical Hub
Economic Powerhouse • Industry Leader • International Brand

MIA’S UP AND COMING CARGO STAR - PHARMACEUTICALS
• First IATA Designated Pharma Hub Airport in the Western Hemisphere and only in U.S.
• Strong Growth in the Transport of Pharmaceuticals Both Locally and Globally
• Extensive Commitment by Local Pharma Logistical Partners
• CEIV Pharma Certification = Business Development

LOOKING AHEAD
• Pharma Hub Designation Will Serve as Catalyst for growing South Florida Pharma Industry
• Leveraging MIA’s IATA Airport Pharma Hub Designation and Status as Gateway of the Americas
• Have Begun Outreach to Pharmaceutical Manufacturers
• Partnering with Beacon Council
So, what is the MIC?

No, not *THAT* one!

This is the one that your mother WOULD approve of ...
The MIC combines the Rental Car Center (RCC) with the Miami Central Station

The Rental Car Center features:

- 3.4 million square feet
- Four levels, each 20-acres in size
- 16 rental car companies
- Second largest facility of its kind in U.S.
- 6,500 total car capacity
- Fleet storage and staging areas
- Quick turnaround area
- 120 fuel positions & 42 wash bays
- 180,000 gallons of fuel on site
Miami Central Station
Combines:
- MIA Mover (from Miami International Airport)
- Tri-Rail (service from West Palm Beach and Broward County)
- Amtrack (service to NYC via Orlando, Washington DC and Philadelphia)
- MetroRail (Orange Line: Brickell, Gables, Dadeland, Hialeah, etc)
Hyperloop One Planning Connection At Miami International Airport

Hyperloop One is working with Miami officials to build a connection from the Miami Intermodal Center to Orlando’s Airport.

The MIC is connected to Miami International Airport. Travel time between Miami and Orlando airports would take 26 minutes.
PORTMiami
Potential Inland Terminal Locations

Expressway Improvements

• Palmetto & SR 836 (Dolphin) Completed
  Increased and managed lanes being added

• Gratigny Expressway (NW 119th Street)
  Extend east, from 32 Avenue to I-95
  Elevated - 4 lanes, ltd access, walk and drive-through under

• Palmetto & I-95 (confusion corner)
  Reconfigure Palmetto East to I-95 north
  (add truck stacking lanes in loop)

• 25th Street Viaduct Completed

• I-75 South to Turnpike Extension East & North/ managed lanes

• I-395 Re-design

• I-595 Rebuilt and managed lanes
Palmetto to I-95 North
PROPOSED IMPROVEMENTS

SR 826 MANAGED LANES CONNECTION

NOTE: This map shows the connection from SR 826 EB to I-95 NB for illustrative purposes only and does not represent an actual alignment.
Study Area

- Gratigny Expressway Extensions

MDX’s Vision for Northern county East West connectivity
Miami-Dade County Freight Rail Network

Proposed US 27 Rail Corridor
ORLANDO
APPROX. 3 HOURS / PHASE TWO

WEST PALM BEACH
UNDER 1 HOUR

FORT LAUDERDALE
UNDER 30 MINUTES

MIAMI
Now Boarding - Track 2
7:10 am to Fort Lauderdale / West Palm Beach
Brightline Miami Central Station
Thank you for visiting South Florida, 
*The Emerald City*...

for bringing our nations closer together, and
for making **OUR** world
a better place for **ALL** of us!
Special thanks to:

- Miami-Dade Board of County Commissioners
- The Beacon Council
- PortMiami
- Miami International Airport
- Borghese Investments (Pete Garcia and Trish Blasi)
- Odebrecht
- Broward County Board of County Commissioners
- Fort Lauderdale History Center
- Broward Historical Society
- Port Everglades
- Fort Lauderdale – Hollywood International Airport
- Miami Dade Expressway Authority
- Miami-Dade Metropolitan Planning Organization
- Broward Metropolitan Planning Organization
- Freight Transportation Advisory Committee
- Florida East Coast Railway
- The Panama Canal Authority
- AECOM
- CoStar
- Real Capital Analytics
- National Association of Realtors
- Miami Association of Realtors
- CBRE (Mike Silver, Paco Diaz and Robert Given)

- Ricondo Associates
- Atkins Global
- HFF – Haliday Fegnolio Fowler
- FDOT District 6
- FDOT District 4
- Miami Association of Realtors
- National Association of Realtors
- Society of Industrial & Office Realtors

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