

## **Notes to PowerPoint Presentations**

Three PowerPoint Presentations concerning the findings of the main report and the findings from the guide are provided in this Implementation Binder. The one most closely related to the project structure is termed, “Inland Ports: Partnering with TxDOT”. In that presentation, most of the slides are self-explanatory and there are slides with specific examples of inland ports. Interest in a specific inland port can be evaluated in greater detail by looking at Report 4083-1.

Mention is also made of a lifecycle which was used to describe the way a typical port might grow from a small single mode site to a large multimodal distribution center. However, it must be noted that this growth is rare. More typically, sites will grow to a certain level and not go through all the stages indicated in the lifecycle. There is absolutely nothing wrong in a site staying small or medium but the authors used this method to classify the ports in a way that would be suitable for TxDOT planning process. Again the lifecycle concept is described in 4083-1 and the 4083 Guide. A slide also shows the growth of companies in key sectors over time at Alliance Texas, where it can be seen that a lifecycle curve is an appropriate way of identifying growth.

The second presentation entitled “Inland Ports: Planning for Success” emphasizes partnering with TxDOT can comprise a review of the inland port approach adopted by CTR, key characteristics of established inland ports and the benefits of inland ports to society, private and public entities.

The third presentation entitled “Demonstrating the Inland Port Evaluation Guide” charts the partnering progress that the guide developed for TxDOT Planners and Inland Port Sponsors. The slides provide an in-depth analysis of the flowcharts developed to

show the private sector development process, and then the private sector process incorporated into TxDOT's project development process.

Finally, these PowerPoint presentations are structured to support the central theme of the research, which was to suggest how TxDOT planning staff could deal with communities wishing to support inland port concepts and developments. To show the linkage between stages of an inland port's growth and TxDOT's planning process, the reports describe the actions of both sponsors and TxDOT staff at each stage. The overall objective is quite simple. It is to ensure that those promoting inland ports understand the TxDOT process and through engaging in this joint activity become a partner in planning the appropriate transportation links needed at the facilities. Further questions arising from any of these presentations can be answered directly by contacting Robert Harrison at CTR.



5-4083-01

# Demonstrating the Inland Port Evaluation Guide



LRD	Luis Ramirez
ODA	Ajay Shakyaver
CTR	Rob Harrison
CTR	Lisa Loftus-Otway



- 4083-1 The Identification and Classification of Inland Ports
- 4083-2 Inland Ports: Planning Successful Developments
- 4083 Inland Port Transportation Evaluation Guide



Implementation work based at the Odessa District, led by Ajay Shakyaver (TPP) and supported by Lauren Garduno (DE).



What Did We Do?

Two Inland Port proposals



Met and distributed 4083 reports and Guide



Formal presentation, based on the Guide  
(Pilot test)



4083 revised procedures



# What Did We Find?



Wide variety of Inland Port schemes, most not undertaken with TxDOT partnering in mind.



Interest in 4083 products and willingness to work with TxDOT and inland port development.



A need to show how sponsor planning and TxDOT's planning fitted together.



# What Do We Recommend?

9/28/2006

Developed an implementation document for district staff

1. Suggestions for dealing with sponsors
2. Revised interview process
3. Questionnaires and scoring
4. Suggestions for more painless partnering
5. Tying work into TxDOT's planning process



1. Each district be made aware of the implementation products
2. Districts develop a proactive role towards inland ports and “big boxes”



# Inland Port Implementation Report

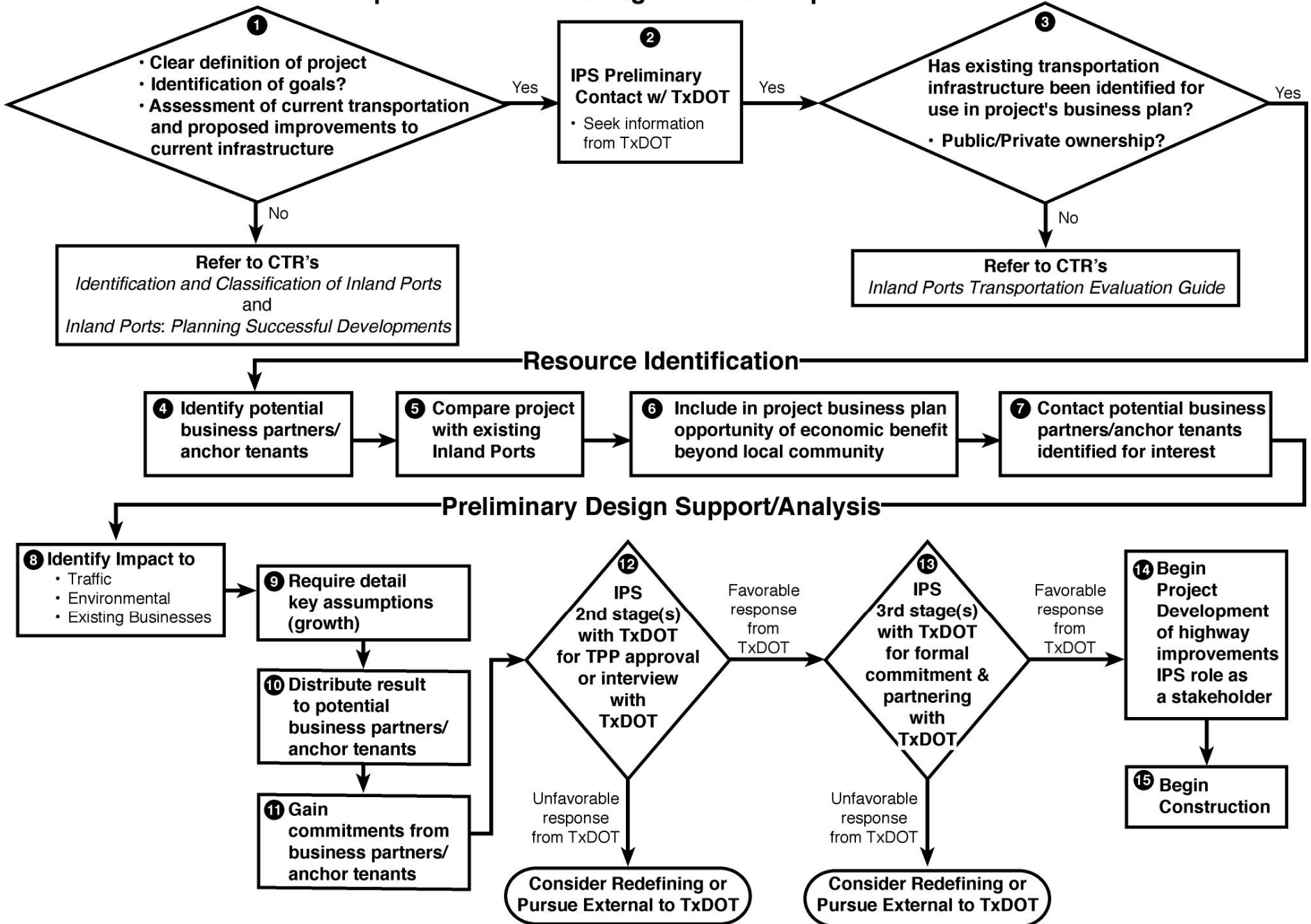
9/28/2006



# Partnering Flowchart for Inland Port Planning

9/28/2006

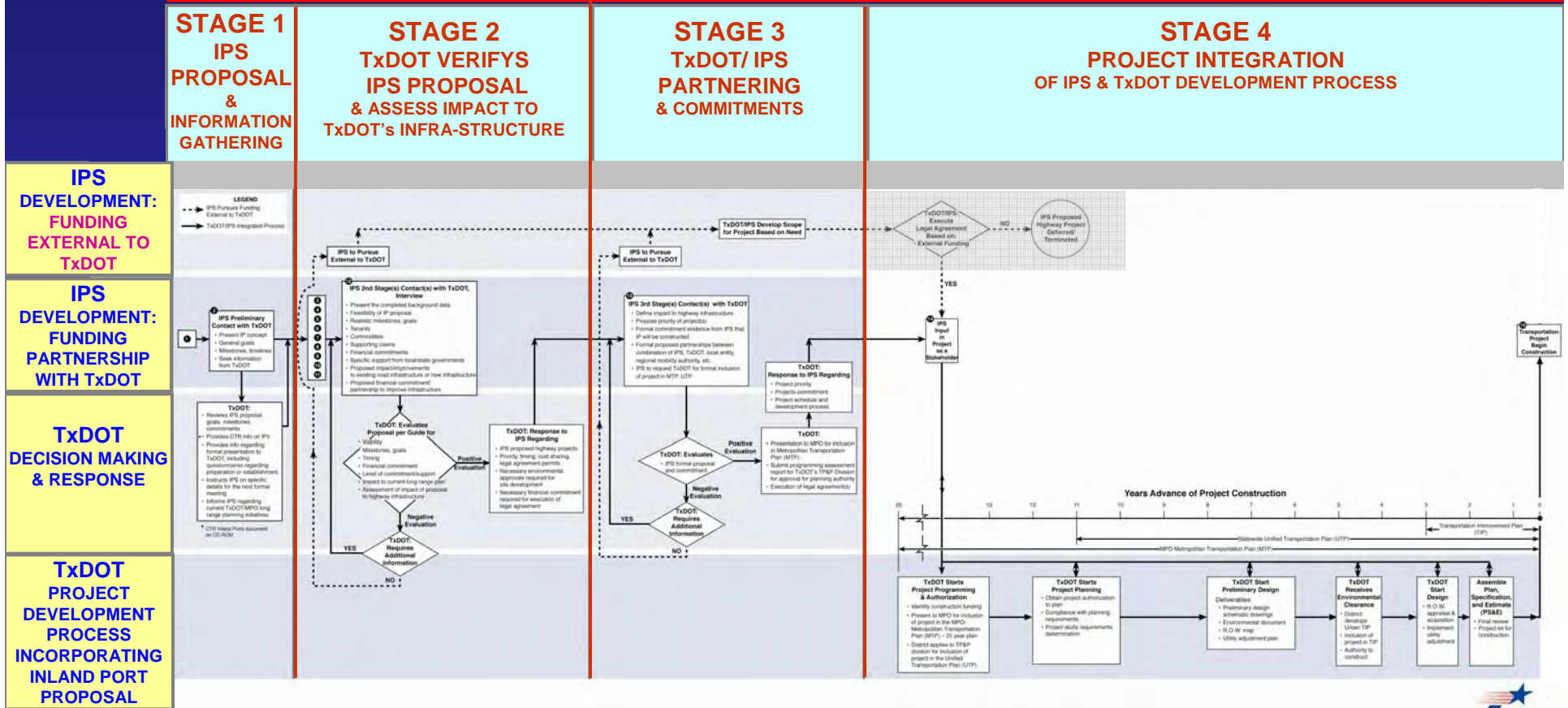
# Proposed Inland Port/Large Box Development Process



# REASONS FOR DEVELOPING TxDOT/ IPS INTEGRATED PROJECT DEVELOPMENT PROCESS

- ❑ TxDOT ABLE TO **PROACTIVELY ADDRESS** INLAND PORT PROPOSALS EARLY INSTEAD OF **REACTING TO THEM**
- ❑ **TOOLS** FOR TxDOT TO;
  - **maintain IPS focus** on information TxDOT REQUIRES
  - ENABLE **TxDOT TO EVALUATE IPS** PROPOSAL FOR;
    - **VALIDITY & VIABILITY** OF PROPOSED IP DEVELOPMENT
    - FINANCIAL **COMMITMENTS & COMMUNITY SUPPORT** FOR INLAND PORT DEVELOPMENT
    - **IPS PROPOSED NEEDS** FOR HIGHWAY INFRA-STRUCTURE IMPROVEMENTS
    - **COMMITMENT FOR A POTENTIAL TxDOT/ IPS FINANCIAL PARTNERING EARLY** IN THE PROCESS
- ❑ TxDOT's **TIMELY EVALUATION OF POTENTIAL IMPACTS** TO ITS CURRENT & PROPOSED INFRA-STR. & PROJECT PLANNING
- ❑ **PRIORITIZE PROJECTS WITH SUFFICIENT LEAD TIME**

# PROPOSED INLAND PORT/ LARGE BOX DEVELOPMENT, AS INCORPORATED INTO TxDOT PROJECT DEVELOPMENT PROCESS



9/28/2006

## **USEFULNESS TO TxDOT & RECOMMENDATIONS**

□ IMPLEMENTATION PROCESS DEVELOPED FOR USE AT DISTRICT/ MPO LEVEL

□ **PROGRESSION STRUCTURED YET FLEXIBLE**

- **FRONTLOAD IPS TO VALIDATE THEIR PROPOSAL**
- **FLEXIBLE FOR TxDOT STAFF TO BE ITERATIVE, AND MODIFY INFORMATION REQUIRED & QUESTIONS ASKED TO SUIT SPECIFIC PROPOSALS**
- **PROVIDES A TIMELINE & SEQUENCE OF EVENTS & TRIGGER FOR BOTH TxDOT & IPS**
- **PROCESS MAY TAKE A FEW MONTHS TO SEVERAL MONTHS, IT ENSURES CONTINUITY & PROGRESSION**
  
- **RECOMMEND DISSEMINATION OF THE MANUAL THROUGH A WORKSHOP PROCESS**

# Stage 1: Introduction of IPS Proposal & Information Gathering

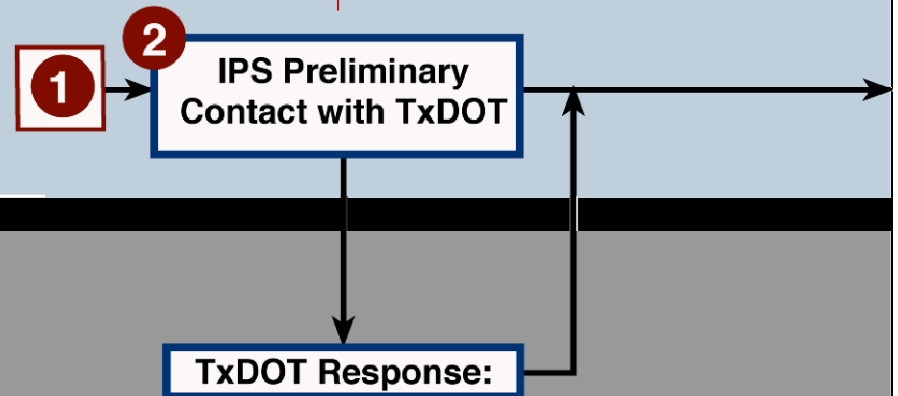
Inland Port Sponsor (IPS) Pursues Project Development with Funding External to TxDOT

**IPS STAGE:**

**INITIAL  
CONCEPT &  
SCOPING**

**RESOURCE  
IDENTIFICATION**

IPS Pursues Project Development with Potential Financial Partnership with TxDOT



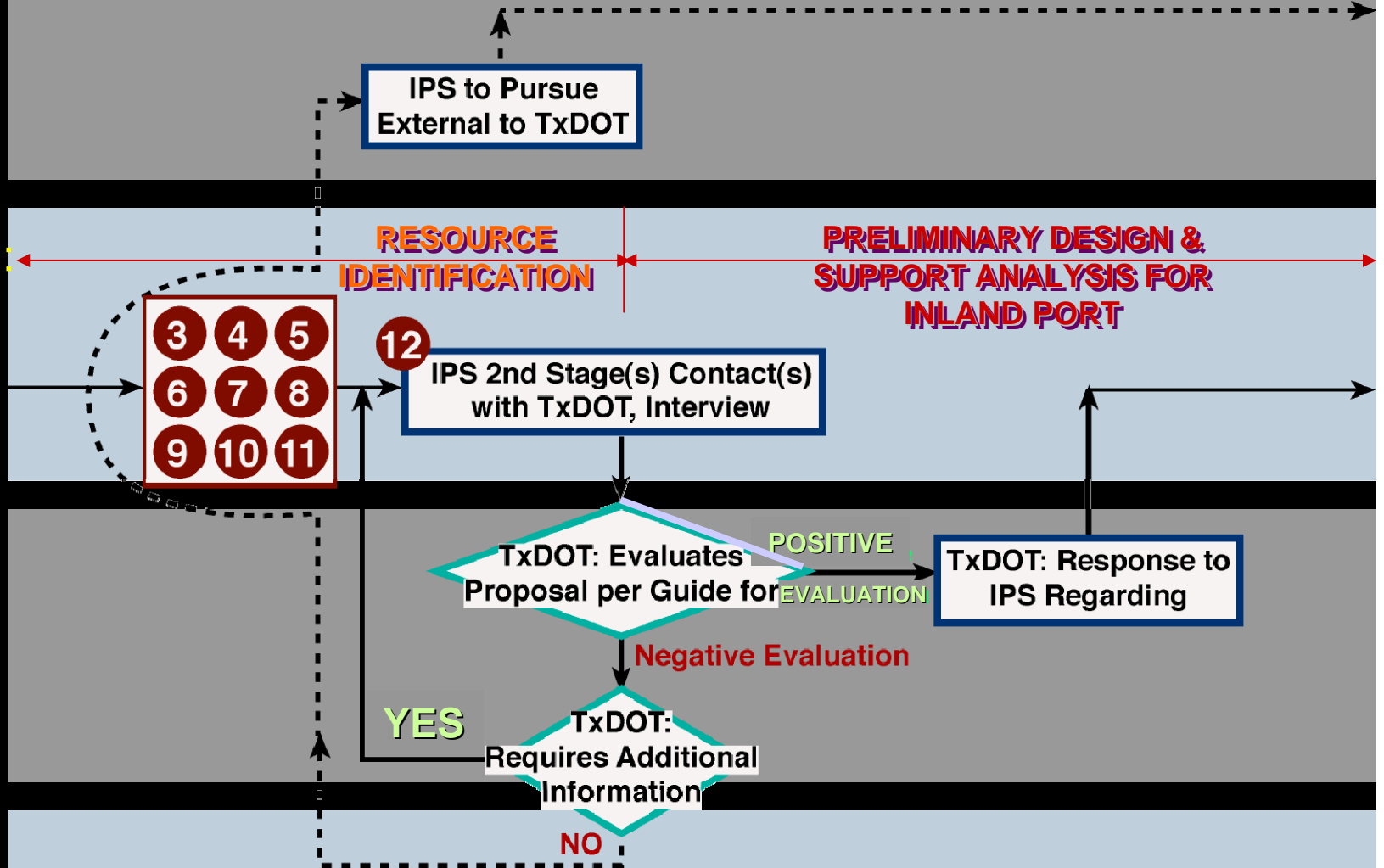
TxDOT Decision Making & Response

TxDOT Project Development Process  
Incorporating Inland Port Proposal

- - ➔ IPS Pursues Funding External to TxDOT
- ➔ TxDOT/IPS Integrated Process

# Stage 2: Verification of IPS Proposal & Assessment of Potential Impact to TxDOT Infrastructure

IPS STAGE:



---> IPS Pursues Funding External to TxDOT

—> TxDOT/IPS Integrated Process

## Stage 3: TxDOT/IPS Partnering & Commitments

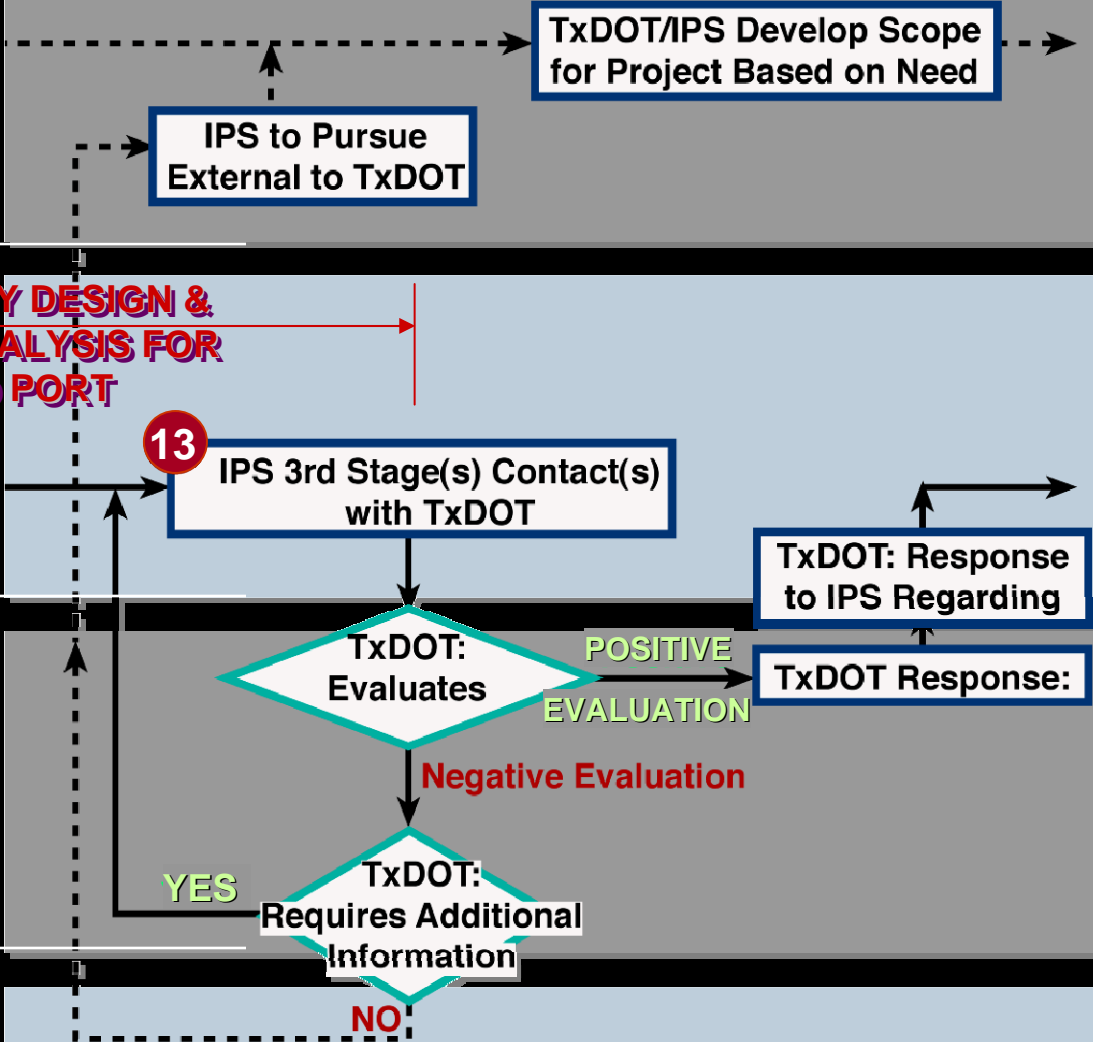
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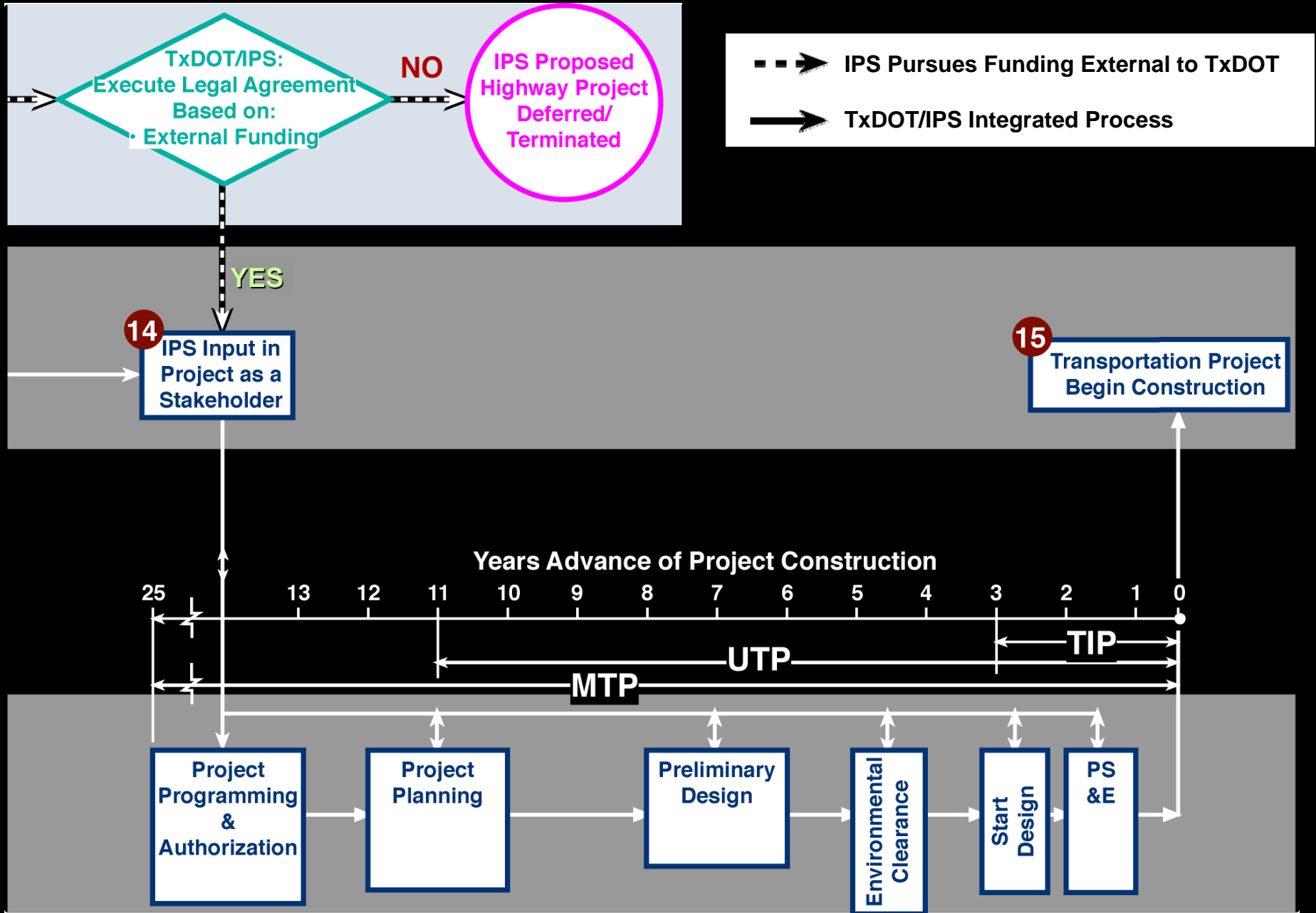
TxDOT Decision Making & Response

TxDOT Project Development Process Incorporating Inland Port Proposal



- - -> IPS Pursues Funding External to TxDOT
- > TxDOT/IPS Integrated Process

# Stage 4: Project Specific Integration of IPS & TxDOT Project Development Process





## Inland Ports: Partnering with TxDOT

Robert Harrison  
Deputy Director

June 2004

This was a presentation given to RMC 2 by Robert Harrison in June 2004 denoting progress on Project 4083.

Call Mr Harrison on 512 232 3113 (Mark Milam) for any questions you may have on this presentation.



## Presentation Overview

- Background
- Inland Ports Defined
- Inland Port Development Lifecycle
- Inland Ports: Role and Benefits
- Conclusions

The presentation is divided into five sections.

This presentation is intended for TxDOT Planning Staff and was developed to assist them in disseminating the results of the research to others including, local Chambers of Commerce, MPO's, Local Governments, Economic Development Departments in Cities and Counties and groups promoting inland port sites.



## Background

- **Funded by the Texas Department of Transportation**
  - U.S. Department of Transportation
  - Federal Highway Administration
- **Collaborative Effort**
  - University of Texas at Austin's Center for Transportation Research
  - Texas Transportation Institute
  - University of San Antonio

This deals with the structure and funding of the research project and is self explanatory.



## Objectives

- To define and characterize inland ports in a planning context.
- To facilitate a better understanding of their benefits and impacts on the transportation system.
- To facilitate their inclusion in state transportation planning.

Inland Ports first came to the research teams attention in the late 1990's. By the time the research was commissioned many of these facilities had come 'on-line' or were being heavily promoted.

The critical feature of this work is that it was done through the 'eyes' of a TXDOT District Planner. The report was structured to familiarize district planners with the characteristics of a whole variety of issues surrounding inland port development and their effects on transportation infrastructure.

The research did not project any commercial agenda, did not favor any facility in any specificity and all the documentation was created to sharpen TxDOTs planning vis-à-vis incorporation of inland ports and their development into TxDOTs long-range planning process.



## What is an inland port?

*...“a site located away from traditional land, air, and coastal borders with the vision to facilitate and process international trade through strategic investments in multi-modal transportation assets and by promoting value-added services as goods move through the supply chain.”*

In literature and promotional documents a wide range of definitions were noted. For the purposes of this research project, this definition was developed and used throughout the 4083 research series.

See Report 4083-1 page 69 (on the accompanying CD ROM)

# Inland Port Development Lifecycle



Research Report 4083-1 Chapter 7 (page 59) initially developed a lifecycle figure and discusses the lifecycle process. Research Report 4083-2 Chapter 4 (page 20) refined the lifecycle process and created the lifecycle triangle seen in this slide.

The researchers regard this figure as a critical instruction for TxDOT planners and for anyone presenting or wishing to sponsoring inland ports to others and, for those wishing to learn about inland ports.

Inland ports come in different shapes and sizes from industrial park to an international trade processing center.

The triangular part of the figure represents the stages of the lifecycle through which every inland port passes.

This was a central finding of the first report (4083-1) and was an original contribution to the transportation literature.

Most of the so-called inland port sites will remain in stages I and II and very few grow to the size of say, Alliance, Texas. The two boxes on either side of the triangle represent the inland port proponent elements and the TxDOT planning response for each of the five-stages of the life cycle. For example, a new site would be classified “preparation” and the proponents would offer evidence to support the site addressing the subject headings in the box on the left, while the TXDOT Planning Group would consider those under the TXDOT heading on the right. Furthermore for those say in the Fort Worth District dealing with Alliance they would be dealing with Stage IV in this process.

As a minimum the research team strongly advises that the guide (Inland Port Transportation Evaluation Guide 4083-P) is read before a presentation is given on inland ports.



## Inland Port Development Lifecycle: Preparation

- Inland Port Developer
  - Marketing and Implementation Plan
    - Goals and objectives, planning horizon, market analysis, prospective funding, community outreach, transportation assets
- Transportation Agency
  - Planning Meetings
    - Inclusion in the state transportation plan

The next five slides cover the different stages of the life cycles from two perspectives – those proposing or supporting a site and the TxDOT planner. The idea of this approach is that the TxDOT Planner using the lifecycle approach can control the evaluation process in a more effective manner. For this and each successive four stages it is expected that the sponsors will provide an insight into their activities and the associated transportation needs while the planner and their evaluation team evaluates the opportunity for fitting these needs into the typical TxDOT planning horizon – one that can exceed twenty years.

Most of the work on inland port that TxDOT planners will face is of this and the second stage of the life cycle. Many Chambers of Commerce and other economic entities are promoting inland ports as a way of expanding the tax base and providing new employment for the local region. There is a risk or tendency to ignore TxDOT at the early planning stages, and, as a result, many districts will find themselves in the position of having to implement transportation infrastructure promises that have been made. In this case they are reacting to a situation rather than being part of the planning process. It is hoped that by employing this approach TxDOT will be involved more closely in devising the transportation needs at an early stage in the life cycle and can 'slot' these needs into the planning horizon of the MTP, UTP, and TIP.

Please see 4083-1 Chapter 7 pages 59-68 and 4083-2 Chapter 4 - pages 19-31



## Inland Port Development Lifecycle: Establishment

- Inland Port Developer
  - Attract Anchor Tenants
  - Plan Multi-Modal Investments
  - Detailed Modal Analysis
- Transportation Agency
  - Preliminary Design
  - Road Right-Of-Way Considerations

This is a critical stage in the successful implementation of an inland port and is centered around the ability to attract anchor tenants – large firms with a national reputation who provide employment and also encourage other companies to locate in the same vicinity (much as a Lowe’s tries to get near a Home Depot or vice-versa). The ability of the sponsors to show the planner that anchor tenants are now working in the site is a critical element of potential success.

As far as TxDOT planning is concerned the emphasis here is on right-of-way and improvements connecting the site to the arterial system together with any associated signaling.

As a matter of information on Alliance Texas took over seven years to pass through this establishment phase 1998-1995. (See 4083-1 page 38 Figure 4.4.)



## Inland Port Development Lifecycle: Expansion

- Inland Port Developer
  - Multimodal Investments
  - Diversify Tenants
    - Support and service companies
- Transportation Agency
  - Letting/Construction
    - Public-private-partnerships

In this stage many of the modal connectivity's are in place and following the success in attracting anchor tenants other companies arrive. Typically the first group will focus on distribution (at Alliance there was five-fold increase in these type of companies in the expansion stage). This is followed by distribution which has a minor level of manufacturing to be ultimately followed by a group which will have light manufacturing as their key business. In the latter case the suppliers to this business will also locate at the site and form a “cluster” of industrial economic activity.

At this stage the transportation demands are growing substantially throughout the various modes used to serve the site rail and highway will undergo some form of expansion, paving the way for more efficient transportation services to be provided at the site.

TxDOTs interest will focus on all modes, but particularly on trucking. A Wide variety of considerations related to connectivity and trucking services (like truck stops with overnight facilities) could be part of this stage. TxDOT may be called upon to strengthen highways and provide additional capacity at key parts of the highway infrastructure impacting the inland site. At this stage there may be opportunities for funding these opportunities through private-public partnering and this cost sharing will accelerate the likelihood of the products being accepted within the TxDOT planning cycle (perhaps) a reduction in the time required to construct.



## Inland Port Development Lifecycle: Stabilization

- Inland Port Developer
  - Federal Inspection Agencies
  - Evaluate Modal Investments
- Transportation Agency
  - Maintaining Built Facilities
  - Address Bottlenecks/Congested Links
  - Traffic Management

At some time in the lifecycle – possibly around twenty years from initial implementation – the site becomes stable in terms of its ability to attract substantial volumes of new business. The site may remain significant, however, and therefore should remain part of TxDOT's planning activities at the district level. At this point in time both the district planners and those responsible for managing the site will know each other very well and there will be a freer exchange of ways in which improvements can be offered by TxDOT to benefit the efficiency of the site. At this stage such sites can also be important candidates for new international trade initiatives such as those being contemplated at present in moving US China trade away from Southern Californian ports. As an example the proposal to develop a corridor from Lazaro Cardenas to Kansas City using the KCS Railroad to attract diverted containerized cargo from Los Angeles/Long Beach is a good example. Sponsors advocating such a change need to have a center that is “up and running” with some regional history and recognition rather than proposing a brand new site.



## Inland Port Development Lifecycle: Decline/Innovation

- Inland Port Developer
  - Tenants Leave for Better Options Elsewhere
  - Non-trade Services
- Transportation Agency
  - District Meetings
  - Maintenance/Rehabilitation
  - Upgrade/Expand Facilities

Finally, all good things come to an end. The full lifecycle of an inland port is many years and there are good examples of cities that built their economic power on the rail yards of the late nineteenth century (Chicago and Kansas City). These cities have gone on to become important economic centers in different activities although their dependence on rail has significantly declined. But the point that is being made in the slide is that innovation can alter the rate of decline and can provide a different range of economic activities equally important to those supporting local employment and strengthening regional tax bases. In Europe for example, property has been sold off for a whole range of urban development needs and one only has to contemplate the amount of strategically located rail sites in the city of Houston to realize the value of these sites in terms other than those related to transportation. At this point in the life cycle it is expected that TxDOT would re-evaluate its needs to support certain levels of service with respect to connectivity and might be prepared to supply a whole new range of transportation services such as those related to either housing or commercial development in one form or another.

**BNSF Intermodal Facility  
Joliet Arsenal Redevelopment  
Joliet, Illinois**

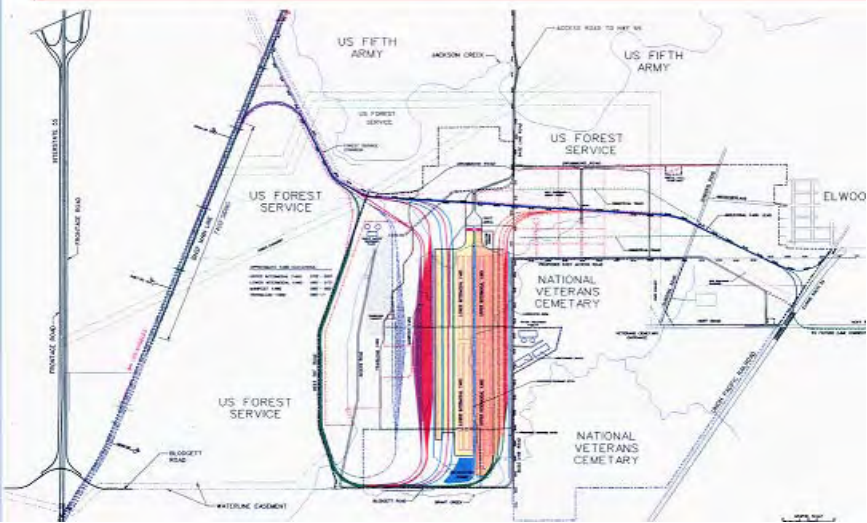


The next five slides show some aspects of the new Burlington Northern Santa Fe (BNSF) Railroad Joliet facility – an inland port in the preparation stage of the life cycle. BNSF benefited significantly from its role in the success of Alliance Texas and has applied this concept to its business plan and is now promoting “logistics parks” which is yet another definition of inland ports. BNSF’s business development plan envisages developing (or reconfiguring or enlarging) six of these logistics parks over the next ten years. It is employing a promoter in much the same way that Hillwood promoted Alliance and is poised to have a significant impact on the logistics sector serving Chicago. Located some 65 miles from the central business district it offers both connectivity to the smaller yards deep within the city limits as well as several interstate links. The slides show the potential layout of several phases which would be – to use this studies terminology- the establishment phase. Preparation is relatively costly because the yard has been built to handle the heaviest international containers sent by sea. One of the slides shows the tire pressures that the pavement has to carry from some of the giant crane equipment used to move containers around the yard.



BNSF Joliet facility

# Facility Overview



BNSF Joliet facility – development plan.

## Inputs – Design Vehicle

- Rail Stacker MJ 50RS
  - ✓ axle load: 226,600 lbs
  - ✓ ground pressure: 140 psi
  - ✓ four tires

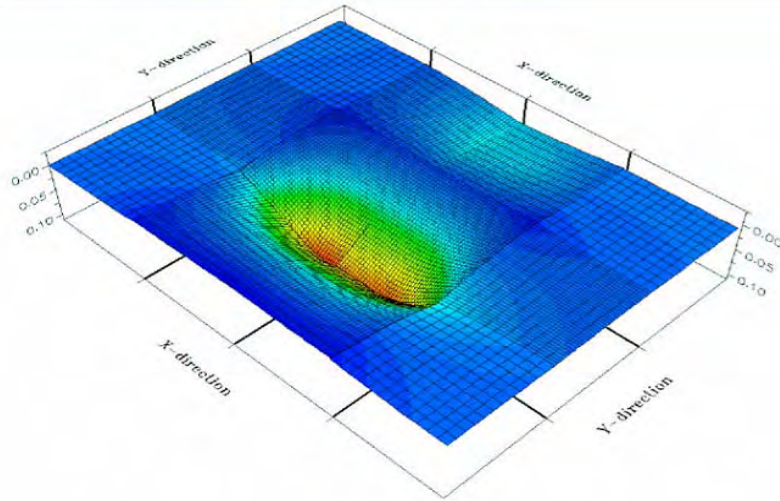


- Translift Model MJ 1000RC Crane
  - ✓ wheel load: 90,603 lbs
  - ✓ ground pressure: 106 psi

Tire pressures from intermodal yard equipment.

## Resulting Deflections

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Pavement deflections based on tire loads imposed by heavy crane wheels.

# Logistics Park-Chicago



- **Premier Intermodal Facility**
  - Close to current and emerging markets
  - Capacity to grow
- **Major retailers, distribution centers, ocean carriers and motor carriers are locating to LPC**

*Expanding for Growth*

The next five slides show some of the BNSF logistics park facilities planned expansion and development.

This slide shows the Joliet facility

# Logistics Park-Chicago



- **Strategically positioned as one of the fastest growing markets in North America**
- **Massive Intermodal infrastructure surrounds LPC**

*Expanding for Growth*

As you can see the Joliet facility is strategically positioned closed to a major interstate highway.

# Memphis Intermodal Facility



- **Current expansion**
  - Increasing track, container yard and parking capacity
- **Planned expansion**
  - Premier Intermodal facility in Southeast
  - Close to customers and growth markets
  - Over 1-million lift capacity

*Expanding for Growth*

BNSF is currently expanding and ‘up-grading’ its intermodal facility in Memphis into a logistics park. Memphis is strategically located within the south eastern United States and is close to many major markets. Fed-Ex is located here so this hub will also facilitate international trade and deliveries.

# Logistics Park-Alliance



## *Expanding for Growth*

Alliance, Texas developed by the Hillwood Group is the largest inland port facility within the United States. It was initially created by Ross Perot Jr in 1998. It is located alongside Interstate 35 north of Fort Worth and is served by BNSF, and Union Pacific and Alliance Airport. The initial driver for this facility was Alliance Airport which managed to successfully negotiate a contract with American Airlines to locate its \$482 million maintenance facility at the site. BNSF was the first major tenant with an auto loading facility in 1989.

At alliance 9600 acres are reserved for industrial development. Hillwood is now actively promoting Alliance as not only as an inland port but as a transportation driven community by integrating housing, shopping and recreation. Two subdivisions Heritage and Circle T Ranch have been developed close to Alliance. A two million square foot shopping mall is proposed for the future.



## The Benefits of Inland Ports: Societal

- Economic Development
- Employment Creation
- Increased Tax Revenues
- Reduced Congestion and Environmental Pollution at Traditional Ports of Entry

Why should TxDOT planners bother with those proposing new inland ports? The reasons are twofold:

- (1) First, inland ports cannot be built in metropolitan areas – the cost is simply too great. (Area 1000 + acres needed). So they are located in rural areas on the edge of metropolitan regions where TxDOT can exert some measure of control if it is brought into the planning process at an early stage.
- (2) Second, the economic benefits can be high in a district where job prospects are not strong. This will affect political support which should be recognized by TxDOT. Also, by early involvement, TxDOT is perceived as a ‘good and interested’ party in the process, raising its local status.



## The Benefits of Inland Ports: Private

- Multi-Modal Transportation Access
  - Shipment Requirements
    - Cost, speed, and reliability of service
- Improved Supply Chain Management
  - Supply Chain Activities Cost American Companies \$1.7 trillion (2003)
    - Cost of movement, storage, and control of products across the supply chain

Inland ports, in one form or another, are a critical part of logistics management and supply chain management. It is these cost impacts that drive decisions on inland port location. It is also the driving force in programs involving private-public partnerships and the cost sharing of infrastructure improvements.

## The Benefits of Inland Ports: Public Agency

- Optimize Existing Port Capacity/Border Facilities
- Leverage Private Funds
- Allow Modal Split away from Heavy Trucks
  - PIDN: Port of New York/New Jersey

### Modal Split Projections: 2040

	Truck	Barge	Rail
Without PIDN	86%	0%	14%
With PIDN	38%	39%	23%

Inland ports can help in reducing truck flows on congested highways.

- (1) They can take traffic off highways for much of the trip (eg by moving containers by rail to inland ports, like the PIDN (Port Inland Distribution Network of the Port of New/New Jersey))
- (2) Marine port and land border gateways can maintain efficiencies without more funding for capacity enhancement.
- (3) Leveraging private funds (Private-public-partnerships) as mentioned earlier.



## Conclusions

*...“Inland ports complement global supply chains and can become an integral part of transportation trade corridors in improving the efficiency of global supply chains with associated benefits to society, private interests, and public agencies.”*

Self explanatory. Please read final chapters of 4083-1 and 4083-2 for further comments.



# Inland Ports: Planning for Success

Jolanda Prozzi



January 2003

This was presented by Ms Jolanda Prozzi at the 82<sup>nd</sup> Annual Meeting of the Transportation Research Board in January 2003.

For further details contact either Ms Prozzi or Mr Robert Harrison at 512 232 3113 (Mark Milam).



## Presentation Overview

- Background
- Inland Ports Defined
- Inland Port Development Lifecycle
- Inland Ports: Role and Benefits
- Conclusions



This presentation is divided into five sections.

We strongly recommend that the presenter print out research guide 4083-2 and use this as a guide for this presentation.



## Background

- Funded by the Texas Department of Transportation
  - U.S. Department of Transportation
  - Federal Highway Administration
- Collaborative effort
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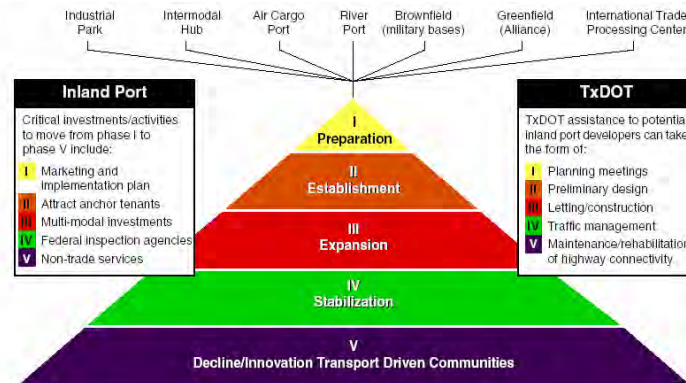
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# Inland Port Development Lifecycle



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  - Preliminary Design
  - Road Right-Of-Way Considerations



This is a critical stage in the successful implementation of an inland port and is centered around the ability to attract anchor tenants – large firms with a national reputation who provide employment and also encourage other companies to locate in the same vicinity (much as a Lowe’s tries to get near a Home Depot or vice-versa). The ability of the sponsors to show the planner that anchor tenants are now working in the site is a critical element of potential success.

As far as TxDOT planning is concerned the emphasis here is on right-of-way and improvements connecting the site to the arterial system together with any associated signaling.

As a matter of information on Alliance Texas took over seven years to pass through this establishment phase 1998-1995. (See 4083-1 page 38 Figure 4.4.)

## Inland Port Development Lifecycle: Expansion



- Inland Port Developer
  - Multimodal Investments
  - Diversify Tenants
    - Support and service companies
- Transportation Agency
  - Letting/Construction
    - Public-private-partnerships



In this stage many of the modal connectivity's are in place and following the success in attracting anchor tenants other companies arrive. Typically the first group will focus on distribution (at Alliance there was five-fold increase in these type of companies in the expansion stage). This is followed by distribution which has a minor level of manufacturing to be ultimately followed by a group which will have light manufacturing as their key business. In the latter case the suppliers to this business will also locate at the site and form a “cluster” of industrial economic activity.

At this stage the transportation demands are growing substantially throughout the various modes used to serve the site rail and highway will undergo some form of expansion, paving the way for more efficient transportation services to be provided at the site.

TxDOT's interest will focus on all modes, but particularly on trucking. A Wide variety of considerations related to connectivity and trucking services (like truck stops with overnight facilities) could be part of this stage. TxDOT may be called upon to strengthen highways and provide additional capacity at key parts of the highway infrastructure impacting the inland site. At this stage there may be opportunities for funding these opportunities through private-public partnering and this cost sharing will accelerate the likelihood of the products being accepted within the TxDOT planning cycle (perhaps) a reduction in the time required to construct.

## Inland Port Development Lifecycle: Stabilization



- Inland Port Developer
  - Federal Inspection Agencies
  - Evaluate Modal Investments
- Transportation Agency
  - Maintaining Built facilities
  - Address Bottlenecks/Congested Links
  - Traffic Management



At some time in the lifecycle – possibly around twenty years from initial implementation – the site becomes stable in terms of its ability to attract substantial volumes of new business. The site may remain significant, however, and therefore should remain part of TxDOT's planning activities at the district level. At this point in time both the district planners and those responsible for managing the site will know each other very well and there will be a freer exchange of ways in which improvements can be offered by TxDOT to benefit the efficiency of the site. At this stage such sites can also be important candidates for new international trade initiatives such as those being contemplated at present in moving US China trade away from Southern Californian ports. As an example the proposal to develop a corridor from Lazaro Cardenas to Kansas City using the KCS Railroad to attract diverted containerized cargo from Los Angeles/Long Beach is a good example. Sponsors advocating such a change need to have a center that is "up and running" with some regional history and recognition rather than proposing a brand new site.

## Inland Port Development Lifecycle: Decline/Innovation



- Inland Port Developer
  - Tenants Leave for Better Options Elsewhere
  - Non-trade Services
- Transportation Agency
  - District Meetings
  - Maintenance/Rehabilitation
  - Upgrade/Expand Facilities



Finally, all good things come to an end. The full lifecycle of an inland port is many years and there are good examples of cities that built their economic power on the rail yards of the late nineteenth century (Chicago and Kansas City). These cities have gone on to become important economic centers in different activities although their dependence on rail has significantly declined. But the point that is being made in the slide is that innovation can alter the rate of decline and can provide a different range of economic activities equally important to those supporting local employment and strengthening regional tax bases. In Europe for example, property has been sold off for a whole range of urban development needs and one only has to contemplate the amount of strategically located rail sites in the city of Houston to realize the value of these sites in terms other than those related to transportation. At this point in the life cycle it is expected that TxDOT would re-evaluate its needs to support certain levels of service with respect to connectivity and might be prepared to supply a whole new range of transportation services such as those related to either housing or commercial development in one form or another.



## Inland Ports: Role and Benefits

- Facilitate Lower Cost Freight Movements
- Benefits
  - Societal
  - Private Sector
  - Public Agency



The next (five) slides discuss the roles and benefits of inland ports. See Chapter 2 pages 5-12 of Research Report 4083-2 for further details.

## The Benefits of Inland Ports: Societal



- Economic Development
- Employment Creation
- Increased Tax Revenues
- Reduced Congestion and Environmental Pollution at Traditional Ports of Entry



Why should TxDOT planners bother with those proposing new inland ports?  
The reasons are twofold:

- (1) First, inland ports cannot be built in metropolitan areas – the cost is simply too great. (Area 1000 + acres needed). So they are located in rural areas on the edge of metropolitan regions where TxDOT can exert some measure of control if it is brought into the planning process at an early stage.
- (2) Second, the economic benefits can be high in a district where job prospects are not strong. This will affect political support which should be recognized by TxDOT. Also, by early involvement, TxDOT is perceived as a ‘good and interested’ party in the process, raising its local status.

## The Benefits of Inland Ports: Private

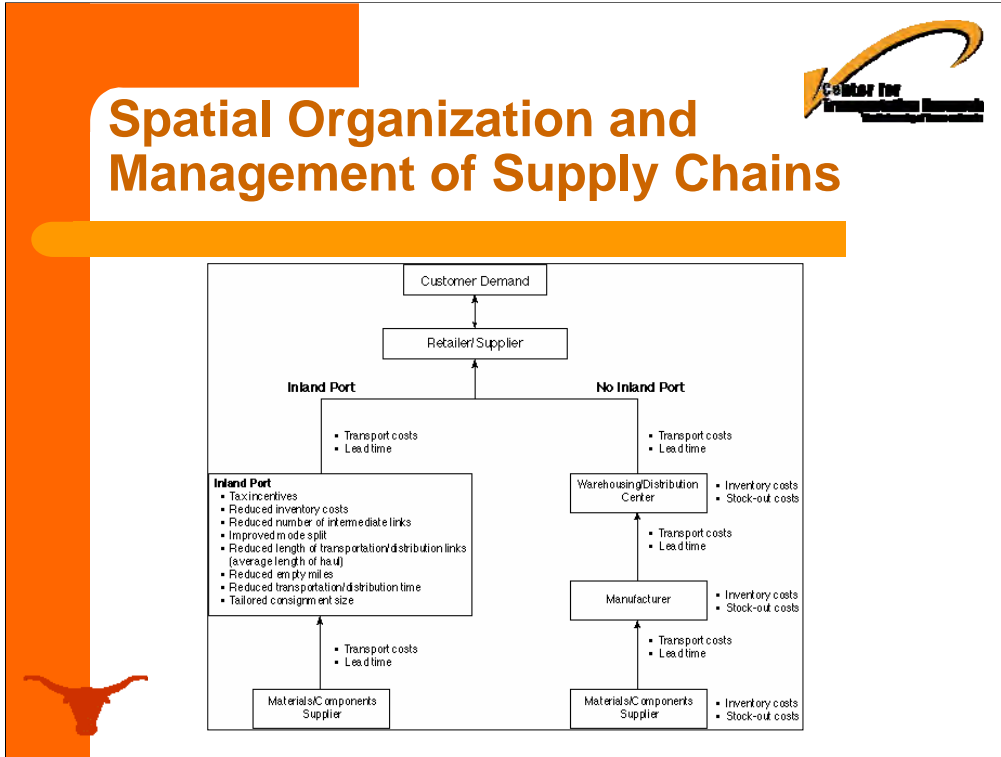


- Multi-Modal Transportation Access
  - Shipment Requirements
    - Cost, speed, and reliability of service
- Improved Supply Chain Management
  - Supply Chain Activities Cost American Companies \$862 billion (1997)
    - Cost of movement, storage, and control of products across the supply chain



Inland ports, in one form or another, are a critical part of logistics management and supply chain management. It is these cost impacts that drive decisions on inland port location. It is also the driving force in programs involving private-public partnerships and the cost sharing of infrastructure improvements.

# Spatial Organization and Management of Supply Chains



The study of logistics has grown since the 1960's and began with a mathematical analysis of regional distribution centers associated with specific industries with the growth of world trade in the 1980's – beginning with the General Agreement on Tariffs and Trade (GATT) and ending within the World Trade Organization (WTO). Emphasis has switched from distribution to the intermodal movement of goods over very long distances. Central to this is the growth of standardized intermodal containers which can be moved efficiently by marine, rail and truck modes. On a per mile basis, marine is the cheapest, rail is next and finally truck – this latter is generally used for the beginning and end of every intermodal containerized move and so cannot be ignored.

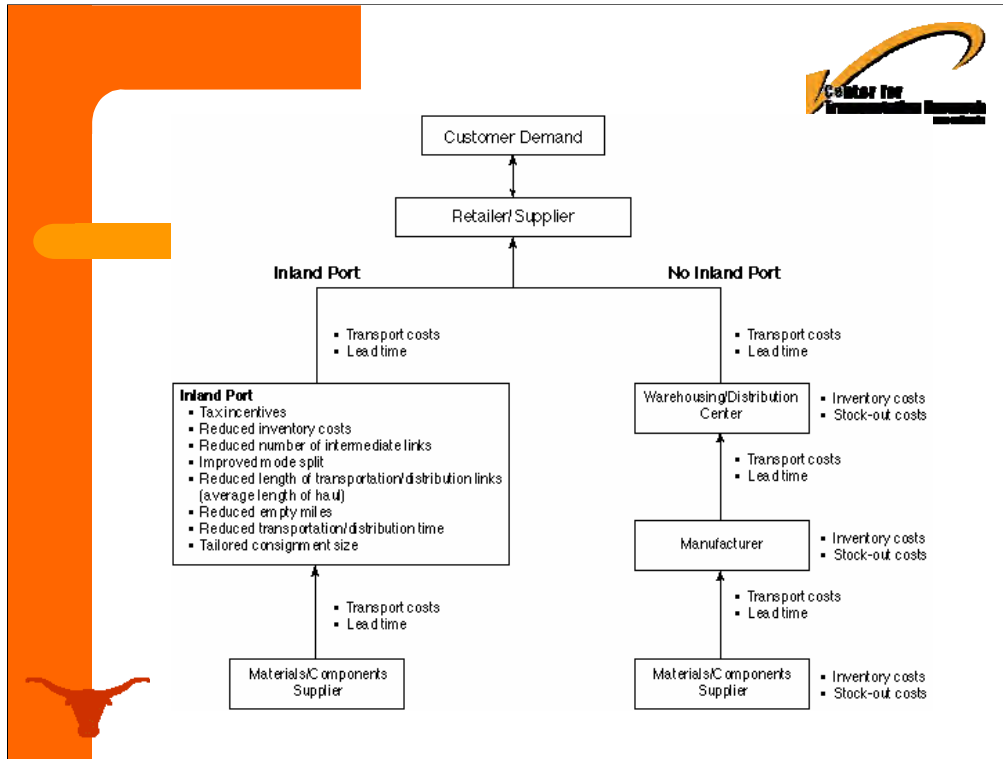
Growth in global trade was fuelled by the maritime links to US Ports and either (a) truck movement to destinations within 500 miles and (b) rail for trip distances greater than this figure. The rail systems provided the land bridge for Asian trade arriving at US west coast ports and destined for the large population centers east of the Mississippi. Most of the audience will have seen these "double-stack" trains moving across the state of Texas many of them destined for locations in other parts of the continental US.

In the 1980's the study of logistics generated manufacturing and distribution patterns that were linked to the expeditious movement of products and inputs and gave rise to the concept of "just-in-time" (JIT). At this time lean-manufacturing concepts were also being implemented so that storage of components in the manufacturing process in large warehouses was no longer required. This changed the manufacturing dynamic also to a JIT process. Truck and then rail began to implement JIT scheduling into their operations as an additional transportation service. As part of the JIT evaluation emphasis was focused on the inter-action between all the components of the trip and this gave rise to the term "supply-chain" and this is now an important feature of transportation operations for American companies.

Where the goods were destined for metropolitan locations they were transferred at rail intermodal yards that became associated with other transportation and distribution services in the early 1990's. This was the genesis of the inland port concept which this presentation examines. For the first ten years (1992 –2002) inland ports have been associated with rail intermodal yards and highway modes and more recently this has been expanded to capture the ability of an inland port to serve a marine port and so avoid the difficulty of expanding facilities at these ports that are typically located deep within metropolitan areas and so are linked to environmental issues including environmental justice.

The figure shows a traditional treatment of a supply chain, with a variety of activities being provided at different physical locations on the supply chain connected by different modes. On the left we have a simplified version where many of these take place in an inland port (such as Alliance Texas). This substantially reduces the transportation elements of the supply chain so reducing costs and raising efficiencies in the whole transportation system.

We recommend that the presenter read Chapter 2 (page 5) of 4083-2 entitled The Role and Benefits of Inland Ports where this is treated in greater detail.



This is the same as the previous slide – but has been enlarged for easier viewing.

## The Benefits of Inland Ports: Public Agency



- Optimize Existing Port Capacity/Border Facilities
- Leverage Private Funds
- Allow Modal Split away from Heavy Trucks

- PIDN: Port of New York/New Jersey

### Modal Split Projections: 2040

	Truck	Barge	Rail
Without PIDN	86%	0%	14%
With PIDN	38%	39%	23%

Inland ports can help in reducing truck flows on congested highways.

- (1) They can take traffic off highways for much of the trip (eg by moving containers by rail to inland ports, like the PIDN (Port Inland Distribution Network of the Port of New/New Jersey))
- (2) Marine port and land border gateways can maintain efficiencies without more funding for capacity enhancement.
- (3) Leveraging private funds (Private-public-partnerships) as mentioned earlier.



## Conclusions

*... “Inland ports complement global supply chains and can become an integral part of transportation trade corridors in improving the efficiency of global supply chains with associated benefits to society, private interests, and public agencies.”*

Self explanatory. Please read final chapters of 4083-1 and 4083-2 for further comments.