

**How the Relationship between Public Officials and the Freight Industry Impacts
Planning and Development**

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THESIS

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SUMMARY

This thesis identifies effective ways in which public officials at the municipal and county levels and railroad officials can reduce public opposition, implement mitigation measures, and promote economic development for freight intermodal terminals. The findings will provide insights on how the working relationship between members of the freight transportation industry and public officials impacts common development issues associated with freight projects.

Since the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, Federal agencies have published guidance documents and have actively worked toward assisting members of the freight transportation industry and Metropolitan Planning Organizations (MPOs) integrate freight projects into the transportation planning process. This relationship should also be examined for how it impacts common project development issues as freight operations continue to grow and public officials try to mitigate impacts to their communities' quality of life and capture economic benefits.

Methods

The author conducted a literature review on the challenges facing the integration of freight projects into the transportation planning process, the growth and impacts of freight intermodal operations, and freight intermodal project development and its impacts on communities. The author also conducted interviews with public officials and representatives from Class I railroads for two cases of the development of freight intermodal terminals. Analysis of the interviews and previous research allowed for the impacts of the relationship between members of the freight transportation industry and public officials to be better understood in how they impact the following project development issues: public opposition, mitigation of local impacts, and economic development.

SUMMARY (continued)

Conclusions

This study makes recommendations on ways public opposition can be reduced, effective mitigation measures can be implemented, economic development can be promoted, and communication can be increased among local/regional governments and private stakeholders for intermodal freight terminals. Recommendations are based on analysis of information gathered from the two case studies and from the literature review. Recommendations for each of these issues are discussed in the context of why they are important, the challenges with implementation, the impacts on the project if they fail to be executed, and resolutions to the implementation problems. The context for the recommendations reflects the insights gained by interviewing public officials and railroad representatives for each of the cases.

Discussion of the thesis' findings and its recommendations identifies critical areas where gaps exist between members of the freight industry and public officials and the effects these gaps have on the common development issues for freight intermodal projects. Differences in regulation across all levels of government significantly impact the way in which a freight intermodal terminal is developed regarding the level of review and public participation that is required. The development process that must be followed for these projects can greatly vary based on what state, county, town, or environmentally sensitive land the project is located. The inconsistency creates some areas where the development process may be too strenuous on development and other areas where project review and public participation is not effectively utilized.

This thesis also identifies how public officials' lack of formal freight training and industry knowledge impacts attempts to capture economic benefits from freight activity and to avoid negative impacts to their communities' quality of life due to freight activity.

1. INTRODUCTION

1.1 Background

The intersection of freight operations and the general public and communities is becoming more important given the expected growth of freight and the need for increased infrastructure projects. From 1960 to 2008, freight truck vehicle miles have increased by 107% while road capacity increased by only 13% during the same period, which has contributed to congestion on U.S. roadways (FAF3, 2011). This trend will continue with freight transported by trucks and by rail expected to increase 33% and 24%, respectively, by 2030 (FAF3, 2011). The growth of intermodal freight has been the primary reason overall freight ton miles have increased at the rate that they have and are expected to do so in the near future. Increasing economic globalization has required goods to be transported farther distances which has increased the demand for freight transportation (Rodrigue & Notteboom, 2008; Rodrigue, 2011). In order to handle and transport this freight among the multiple modes involved in the supply chain, new infrastructure has been required in efforts to optimize operations. This has resulted in the expansion of marine ports that handle container ships and freight intermodal terminals that transfer containers between trucks and trains.

Members of the freight industry and public officials must work together to overcome the planning issues that arise when developing freight projects to ensure maximum benefits for the freight network and for communities. Freight projects have the potential to bring economic development to an area, but also bring quality of life concerns that must be addressed. Freight projects must also be located where they will be most productive to the freight network, which can often lead to conflicts with local land uses.

The increases in intermodal and the related operations and developments of intermodal terminals have been recognized by public officials and economic developers as a significant opportunity to add jobs to a local economy (Dock, Benedict, & Chandler, 2008). The location of intermodal terminals can promote the clustering of value-added industries such as warehousing, transportation and light

manufacturing because of the enhanced productivity these industries experience by locating in a certain proximity to an intermodal terminal (Schmidt, 2010).

A major challenge to the establishment of new freight rail intermodal terminals is the public opposition to such developments. These terminals can present themselves as locally unwanted land uses (LULUs), which can be described as unwanted uses of land by local stakeholders (Schively, 2007). Despite the well known national and local benefits that intermodal terminals can bring, such as a more efficient transportation system and a boost to local employment, the planning process of these projects can often involve the mobilization of local groups of citizens in attempts to bring the projects to a halt (Kaufman, 2008).

As is the case with all types of LULUs, mobilized citizen groups against railroad projects are often described as NIMBY (not in my backyard). Freight intermodal projects can cause negative impacts on a community's quality of life. Impacts can include increased train and truck traffic, increased air, noise and light pollution, and conflicts with surrounding land uses. In addition to threatening quality of life, these impacts threaten property values which can cause public sector resistance and delay or alter a project (Kaufman, 2008).

These issues regarding project development of freight projects were apparent at the 2011 Rail Conference hosted by the National Association of Counties (NACo) held in Lisle, IL on April 27-29. The conference was attended by public officials from around the U.S. who were interested in better understanding how their communities could plan for the growth and change of freight transportation. Throughout the conference, many public officials expressed frustration and confusion that they experience when planning with railroad companies. These feelings stem from being unsure about how the impacts of freight growth will affect their community and what they can do to influence the process. A major concern expressed by the public officials was potential resistance from their constituency over freight projects, and the public officials were looking for solutions that they could take back and convey to their constituents in order to ease concerns about the impacts of freight growth.

1.2 Problem Statement

Members of the transportation industry are familiar with how the relationship between the freight industry and public officials has impacted efforts to better integrate freight transportation needs and projects into the transportation planning process. Federal departments and agencies have published several guidance documents intended to assist state Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) with integrating freight into transportation planning and increase the amount of freight projects that make it into a region's Transportation Improvement Plan (TIP). Some of these organizations include the Federal Highway Administration (FHWA), the National Highway Institute (NHI) and the National Cooperative Highway Research Program (NHCPR) (Cambridge & Reebie, 2001; Williamson et al, 2007; NHI, 2012).

Even though formal programs have attempted to address how the relationship between the freight industry and public officials affects integration of freight projects into the transportation planning process (MPO process), this relationship should also be considered for how it impacts project development issues to see why problems exist regarding freight projects and community issues. When developing freight projects, reducing public opposition, implementing mitigation measures, and promoting economic development are common challenges that occur that public officials can affect.

Consideration of freight needs by MPOs is a more recent phenomenon that was largely the result of the Intermodal Surface Transportation and Efficiency Act (ISTEA) of 1991 (U.S. GAO, 1996). Recognizing that freight was a major contributor to the stress placed on the highway system, ISTEA was the first Federal legislation to require MPOs to integrate the needs of freight transportation, in addition to the needs of passenger transportation, into their long range plans and ultimately their TIPs (Czerniak, Lahsene, & Chatterjee, 2000). Integrating freight into the transportation planning process has remained challenging for both MPOs and members of the freight industry.

DOTs and MPOs were originally formed to facilitate the passenger transportation planning process. This resulted in these organizations being structured by transportation mode, which does not

lend itself well to the inherently multimodal and intermodal nature of freight. Conversely, the logistics industry understands freight movements very well and has been set up to manage and plan for these movements across modes (NHI, n.d.). This issue has been, and in some cases remains, a major point of difficulty for MPOs when integrating freight into transportation planning.

Possibly a greater source for the challenges associated with freight transportation planning is the fundamental difference between passenger and freight transportation, which is that freight is owned and managed by the private sector. Depending on the size of the MPO, the MPO can have difficulty dedicating appropriate resources to freight planning and lack the needed industry expertise to be effective. Members of the private transportation sector can be reluctant in being involved in the planning process citing that they do not get enough value for the time required. This issue of incorporating a privately operated industry into a public planning process also faces challenges due to the public and private transportation sectors having different planning horizons, being beholden to different audiences, and restricted analysis due to proprietary data (NHI, n.d.; Cambridge & Reebie, 2001; Williamson et al, 2007).

In response to these issues, departments and agencies of the Federal government have published several guidance documents intended to assist MPOs and DOTs with integrating freight into transportation planning. Some of these organizations include the Federal Highway Administration, the National Highway Institute, and the National Cooperative Highway Research Program. Solutions have ranged from establishing freight advisory committees to entering into public private partnerships to address freight infrastructure needs.

Unlike the public planning agencies, the freight industry sector does not have industry-wide guidance documents that recommend established ways of effectively integrating planning processes with the public transportation sector. However, the freight industry is able to gain value from being part of the transportation planning process. From getting freight infrastructure projects into a region's TIP to lessening the amount of political and/or community resistance to freight projects, the freight industry

has reason to commit to the planning process (Cambridge & Reebie, 2001; Williamson et al, 2007).

Despite the lack of industry-wide guidance for the private freight industry on how to become a part of the planning process, the freight industry does have proprietary methods for engaging the public sector in planning. For example, railroad companies can be proactive in addressing public concerns as seen by Joe Bateman's presentation of CSX at the 2011 Rail Conference (2011).

1.3 Research Scope

Through examination of two case studies of the development of freight intermodal projects, this thesis will conduct posttest only non-experiment research to answer the central question, **"How are municipal/county officials and freight developers planning for the following common development issues of freight intermodal terminals: reducing public opposition, implementing mitigation measures, and promoting economic development?"** A key aspect in answering this question will be identifying how the working relationship between members of the freight industry and public officials impacts the common development issues. This question will be answered by reviewing two cases of freight intermodal projects to gain a better understanding of which mitigation measures and economic development tools were seen to be most effective by the public officials and freight developers that were involved with the projects.

This thesis identifies the challenges inhibiting the full integration of freight into the transportation planning process and the sources of frustration surrounding the ability for municipalities and developers of freight projects to successfully plan freight projects that benefit both the freight network and communities.

2. LITERATURE REVIEW

2.1 Freight Transportation Planning

2.1.1 Integrating Freight into the Transportation Planning Process

The Intermodal Surface Transportation Act of (ISTEA) of 1991 was the first Federal legislation to emphasize the importance of freight operations and mandate that MPOs consider freight operations in their planning process (Williamson et al, 2007). Due to the persistent problems of increasing congestion, environmental impacts, and escalating costs of construction, ISTEA shifted Federal transportation policy away from expansion of roadways towards better management of the transportation system. As part of this concept, ISTEA addressed and promoted the issues of intermodal freight mobility. Promoting intermodal freight mobility was another major reason ISTEA was passed. The U.S. was facing pressure from the global market to develop a robust intermodal network.

Given the emphasis ISTEA placed on the development of intermodal transportation for goods movement, MPOs and local governments were required to include freight operations into their long range transportation plans (Czerniak, Lahsene, & Chatterjee, 2000). However, ISTEA did not specify methods in which MPOs and local governments should successfully plan with members of the freight transportation industry, which has historically been a difficult industry to plan with due to it being privately led and subject to fierce competition (Cambridge & Reebie, 2001). The drafters of the ISTEA legislation recognized the difficulties that would ensue as MPOs and state DOTs begin planning with the freight community. In response to this problem, in 1991 ISTEA established a National Commission on Intermodal Transportation in order to provide a comprehensive study that examined the financial issues, legality, research and development needs, and impacts on public works infrastructure related to intermodal operations and projects (Skinner, n.d.). In three years, the Commission reported to Congress with its findings on how to improve intermodal transportation in the U.S. (NCIT, 1994).

ISTEA's focus on both freight and passenger intermodal transportation was continued in the next two authorizations, the Transportation Equity Act for the 21st Century (TEA-21) enacted in 1998

and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) enacted in 2005 (Williamson et al, 2007). By retaining the same basic policies that promoted intermodal transportation like ISTEA, these two authorizations promoted additional research on intermodal operations and its challenges largely to be done by organizations such as the Federal Highway Administration (FHWA), Transportation Research Board (TRB), the National Highway Institute (NHI), and the United States Government Accountability Office (GAO) (U.S. GAO, 2007).

The Federal organizations mentioned in the previous paragraph consistently make efforts at acclimating local and regional transportation planners and public officials to planning with the private freight industry. A large part of these efforts has been done through publishing guidance documents for members of the public sector. These documents typically identify what the common problems are when it comes to integrating freight into the transportation planning process and several reviews of best practices from local and regional governments from around the country (Williamson et al, 2007; Wilbur Smith & Associates & Kale, 2010; Cambridge, Prime Focus, & Heanue, 2007).

2.1.2 Challenges of Integrating Freight into the Transportation Planning Process

One of the biggest challenges facing MPOs and State DOTs when attempting to sustain a successful planning relationship with the private freight industry is establishing a long term and engaged relationship. For several practical reasons, members of the private freight industry often find the way in which local and regional governments go about the planning process to be too time consuming, bureaucratic, and generally too different from how the process occurs in the private sector. The FHWA's *A Guidebook for Engaging the Private Sector in Freight Transportation Planning* notes that members of the freight industry often have a problem with the difference in time horizons between the private sector and the public planning agencies when it comes to planning and capital investment. According to interviews conducted by the FHWA, the MPO for Minnesota's Duluth-Superior metropolitan area affirmed this finding by explaining that the public sector is forced to think long-term and take on greater risk when developing area plans, while the private sector is more focused on project

time horizons which are typically short to mid-term and cannot take on too much risk for fear of losing investors (Wilbur Smith & Associates & Kale, 2010).

The National Highway Institute's (NHI) course titled *Integrating Freight in the Transportation Planning Process* stated that long range planning in the public sector generally takes the form of a 10-20 year capital improvement plan (CIP). For the freight industry, the timeframe on this would be closer to 12-18 months. This mismatch in planning horizons makes it difficult for the public and private sectors to plan, program, and implement projects as part of an integrated process (NHI, n.d.).

The difference in planning horizons in part has to do with public planning agencies and private freight companies being accountable to different audiences. In the case of MPOs, the public leaders are responsible for protecting quality of life and economic well being for their constituents and the general public. In the case of railroad companies, company leaders are responsible for protecting return on investment for their investors. (Wilbur Smith & Associates & Kale, 2010; Williamson et al, 2007).

In addition to the temporal difference when it comes to integrating freight planning into the transportation process, the two sectors also have a difference in scope. The main focus and concern of public officials are related to impacts that occur locally and regionally while members of the freight industry are concerned with how the results of their planning will impact at the national and international scales. This difference in scope often makes for a difficult planning environment (NHI, n.d.).

Another reason MPOs and DOTs have a difficult time keeping the members of the freight industry engaged in the planning process is due to the public planning process being perceived as slow moving and overly bureaucratic. According to NHI, members of the private transportation sector find that planning with the public sector typically involves long meetings at inconvenient times. Specifically, meetings lasting for over one hour in the middle of a business day can be too inconvenient for members of the private transportation sector to attend on a regular basis. MPOs have found that when the private sector is only able to partially commit to the planning process then they are not able to realize the benefits of integrating into the planning process.

FHWA has found that local and regional governments have a difficult time attracting and retaining staff with the needed logistics and overall freight expertise. Typically, a person that would meet these qualifications chooses to work within the private freight and logistics industry. In addition to the difficulty of finding experienced staff, local and regional governments often do not have the resources to commit to freight planning given strained budgets (Wilbur Smith & Associates & Kale, 2010; Williamson et al, 2007). Lack of staff expertise can hinder the process of integrating freight into transportation planning in basic ways. One example is the difficulty for DOTs and MPOs to identify the varied stakeholders of freight transportation, which include shippers, carriers, brokers, forwarders, and 3pls, or coordinating firms. Because planners have difficulty identifying these groups due to a lack of expertise, fully engaging the freight community into the planning process is made difficult (NHI, n.d.).

The National Highway Institute further emphasizes the importance that the staffs of local and regional government organizations have freight knowledge. Typically, DOT and MPO staffs have been formally educated in transportation planning, but rarely have they received formal education on logistics or the freight industry. Most staffs obtain their information on freight from courses, such as provided by NHI, and other Federal guidance documents. Federal organizations provide resources that teach MPO staff about the importance of freight to a community's quality of life and how to appropriately analyze freight data to best integrate its needs into the planning process. However, it is typically an MPO's technical staff that makes use of the resources available while the decision-makers, including MPO boards, DOT commissioners, and state legislatures, do not take part in the available resources. Popular resources include NHI courses, the FHWA's Taking Freight Series, and various publications (NHI, n.d.).

In addition to a lack of staff resources, MPOs simply have a dearth of freight data which makes it nearly impossible to adequately integrate freight projects into the transportation planning process with the goal of funding and implementing freight projects. This lack of data is largely due to the proprietary control freight transportation companies have over their information. Due to fierce competitiveness

within the private freight industry, companies are hesitant to give information to planning agencies due to the possibility of information leaking to competition (NHI, n.d.).

As MPOs have made progress integrating freight projects and operations into the transportation planning process, success too often stops at the planning stages and efforts fail to program funds that will implement projects with the specific purpose of increasing freight mobility. This problem reflects the reality that public officials are hesitant in dedicating taxpayer dollars to projects that overwhelmingly benefit the private sector. This hesitation comes from multiple sources. One source of this hesitation is due to public officials, and their constituents that pressure them, do not fully understand how increased freight mobility positively impacts the public (Wilbur Smith & Associates & Kale, 2010; Williamson et al, 2007). The biggest issue may be the problem of benefits of increased freight mobility having a greater impact at the national and regional levels and the costs of it are felt at the local level which is the level where public officials have power in negotiating these projects (NHI, n.d.). As long as local public officials either do not understand how freight benefits the public or are not convinced, freight projects will continue to have a difficult time moving from the planning stage to the program and implementation stages as part of the transportation planning process. Because public officials are responsible to their constituents, public input and support can be very important to whether a freight project receives public money or not. Typically, input from the general public is difficult to obtain because the link between an efficient freight transportation system and increased economic competitiveness and quality of life is not established. Currently, most input that comes from the general public comes in the form of opposition due to NIMBY issues (NHI, n.d.).

In addition to the lack of political and public support for funding freight projects, most freight improvement projects that are considered in an MPO's TIP and a DOT's State Transportation Improvement Program (STIP) are evaluated to receive funding using the same set of criteria used for evaluating passenger improvement projects. The criteria used tend to judge projects based on how they will improve highway volume to capacity ratios and highway level of service ratings and safety. Limiting the criteria to these types of improvements puts freight projects at a disadvantage because a competing

project that may rebuild a highway intersection will typically serve more vehicles than a freight project. Criteria should be expanded to capture the other economic and business development benefits that result from freight projects. Such benefits include improving shipping times, reliability, and extent to which the region is made more competitive to attract and retain businesses and jobs. While some freight projects, such as intermodal-related, score decently, most are not able to score well enough to receive high enough priority to move forward and obtain scarce public funding (Cambridge, Prime Focus, & Heanue, 2007; NHI, n.d.).

The problem of not committing public funds to improvement projects that are perceived to disproportionately benefit freight over the public manifests itself in under built intermodal connectors. Intermodal connectors are the roads that connect intermodal freight terminals, like a rail terminal or airport, to the rest of the local road system. The intermodal connectors that are not part of the Federal Aid Highway System are often in poor condition and are under built for the purpose they serve. However, because they are owned by a public municipality and can serve a private freight interest, like a freight intermodal terminal, public officials are not quick to spend public money on these projects since the positive impacts on the tax payers is not commonly understood by the taxpayers. Improvement of intermodal connectors is a major issue affecting the efficiency of freight operations since they are not currently adequate to serve freight's growing needs.

Despite MPOs and other government planning entities including freight projects and operations when putting together regional transportation plans, goals specific to increasing freight mobility are typically not set. Freight often gets "lumped" in under general goals such as improving the environment, lessening congestion, and improving safety. Freight planning is often seen as a way to mitigate the negative effects of freight operations and projects. Viewing freight planning in such a way results in the adoption of very few policies that aim to increase freight mobility. This further adds disinterest to the private freight industry and discourages them from committing their time to the transportation planning process. More value stands to be gained if MPOs set goals specifically for freight.

2.1.3 Solutions to Integrating Freight Projects into the Transportation Planning Process

As discussed, successfully integrating freight into the transportation planning process is no simple task for MPOs and DOTs. Local and regional governments often have the most trouble getting members of the private freight community to meaningfully participate in the planning process and convincing their constituents that public money should be spent on projects that increase freight mobility. While challenging, there are instances where integrating freight into transportation planning has been done successfully. In summary, MPOs and state DOTs have been successful when they keep the process as least cumbersome to the private sector as possible, keep the process results oriented, and adequately measure the impacts to the public to justify spending public money on projects that increase freight mobility (Cambridge Systematics & Reebie Associates, 2001; NHI n.d.; Cambridge Systematics, Prime Focus, & Heanue, 2007).

MPOs and other local and regional governments bear the burden of integrating members of the freight community in the transportation planning process in the least burdensome way and as part of a process that is not bureaucratic. This involves meeting and discussing ideas in efficient ways that do not inconvenience members of the freight community yet are still productive uses of time. In addition to holding meetings for typically less than one hour not in the middle of a business day, public planning agencies have the responsibility of ensuring meetings are needed and driven by extracting value.

The private sector recognizes the high value associated with time and wants to ensure that if they commit their time to the transportation planning process that there is specific value associated with their time spent. MPOs should first be clear about defining why they are engaging the freight community and what they hope to get out of the process. MPOs should strive to set goals specific to increasing freight mobility and make known a commitment to programming funds and implementing freight projects. Setting freight specific goals gives the process more credibility and makes it more likely that freight stakeholders will stay meaningfully involved. Goals will also help ensure another critical component of making freight planning successful. Specific goals will enable performance measures to be developed, and performance measures are critical for successful freight planning (NHI, n.d.).

The field of transportation planning, and more importantly the programming of funds, is based on the assessment of performance measures to drive investment decisions. Freight planning can be no different. Freight cannot be successfully integrated into the transportation planning process without the integration of freight performance measures. The results of these performance measures can be used in the analysis of alternatives presented in a region's transportation plan and for the selection of freight projects to be included in the region's TIP. Performance metrics vary by mode and can be extensive. For any well run business, transportation operators must have good information on their operation (Gordon, Cambridge, ATRI, StarIris, & CSCMP, 2011). MPOs and DOTs are encouraged to incorporate freight measures. In 1998 the Minnesota DOT (MN DOT) formed a public/private freight advisory committee and developed freight performance measures. MN DOT has been recognized by the National Highway Institute as successfully integrating freight transportation into the planning process as the freight advisory committee has continually met since 1998 (NHI, n.d.).

Both the NHI and FHWA have recommended that MPOs be clear with freight stakeholders about the purpose for engagement, time commitments required, level of commitment required, and how their involvement will impact the results (Wilbur Smith & Associates & Kale, 2010; Williamson et al, 2007).

MPOs should clearly present to members of the freight community the purpose for engagement, time commitments and duration, level of commitment, and how their involvement will affect results (Wilbur Smith & Associates & Kale, 2010; Williamson et al, 2007). If the results do not show that freight stakeholders' involvement had an impact on freight issues or concerns, their future involvement in the planning process will be difficult to secure. In order for an MPO to communicate to the freight stakeholders, the objectives of the plans and programs require MPO staff to have expertise on the freight industry. In addition to the MPO staff being knowledgeable on the freight industry, the local and regional governing bodies must also have this heightened level of understanding regarding freight and its importance to the public. Otherwise, the decision makers may not want to commit public funds to freight projects, and freight stakeholders may not stay engaged in the process (NHI, n.d.).

MPOs and DOTs can also keep the private sector engaged by having the private sector assist in an area that is a common shortfall for public agencies such as difficulty managing transportation across modes. Discussed earlier, transportation planning agencies are often set up modally and have little experience with non-highway projects. This is a common stumbling block for public agencies when they begin to integrate freight into their planning because freight operations and projects are typically multi-modal and intermodal. As discussed before, members of the private sector want to know how their time commitment to the planning process will result in meaningful impacts to the process. Because members of the freight community understand how to manage across modes, they can be instrumental in providing policy guidance to planning agencies and public officials when multi-modal issues arise or plans need to be made. The American Association of State Highway and Transportation Officials (AASHTO) and the Association of Metropolitan Planning Organizations (AMPO) conducted surveys that showed that creating multi-modal plans was the most often cited reason that states and metropolitan transportation agencies involved members of the freight community in the planning process (NHI, n.d.).

In order to ensure that meetings involving freight stakeholders are productive and necessary, in some situations established freight advisory committees can be ended if their goal has been accomplished. Often the case in smaller metropolitan areas, MPOs have recognized that FACs are more effective when they are project based. When the project ends there is no longer the need for the formal planning relationship with the freight community; however, communication should still continue between the freight community and the MPO. For example, in 2006 the North Dakota DOT, a state with a population under three million, created the Regional Intermodal Co-Service Coordinating Board (RICCB). North Dakota DOT created RICCB to help with a specific project, the creation of a multi-initiative statewide transportation plan that included freight goals. When the plan was completed and the RICCB completed its objectives, it was disbanded (Wilbur Smith & Associates & Kale, 2010; Williamson et al, 2007).

In addition to MPOs and DOTs taking steps to ensure engagements among freight stakeholders, local governments can also play an important role at keeping the private sector engaged. When the

Delaware Valley Regional Planning Commission's (DVRPC) started their Freight Forward program to increase communication between the regional freight stakeholders, it was Philadelphia, PA's City Department of Public Works that played the most important role in strengthening the planning relationship. DVRPC had success keeping freight stakeholders interested by focusing the Freight Forward program on small-scale improvement projects that benefited freight operations. Because these projects were tangible and getting done in a short period of time, DVRPC was able to establish a good working relationship with the freight community.

In addition to finding ways to keep the private sector involved in the planning process, MPOs and DOTs must also be persuasive to the public officials and the general public as to why public money should be spent on freight projects. This can be done by giving specifics to public officials and the general public about how a change in freight operations or a new freight project will impact the public. Impacts can be positive and include increased employment, decreased emissions, increased tax revenue, and decreased highway congestion. However, impacts can also be negative and include increased emissions, increased traffic, increased wait times at rail/grade crossings, and noise pollution, among others. Public officials and the general public want to know specifically which parts of the population will receive which impacts and to what degree. This was the approach when the Ohio DOT decided that transportation decision-makers should be better informed about freight activities in the state.

Ohio DOT decided to make a freight impact report that described the freight flows associated with Ohio and how those flows affected the state's highway maintenance programs and the state's economic development efforts. The study was used as part of outreach efforts to legislators, transportation decision-makers and the general public to raise freight's profile among the public and make its impacts better understood. The success of the DOT study was due to its comprehensive and detailed nature. Lawmakers and decision makers were most interested in how the study explained the value that different types of freight flows had to Ohio. These different flows included freight flows originating, terminating, and passing through the state. This level of detail is what is needed to convince decision makers of the value of freight (NHI, n.d.).

Another reason state and metropolitan transportation agencies have a difficult time moving freight projects from the planning stage to the programming and implementation stages is due to freight projects often being major projects that have significant capital costs. An untapped resource for funding and financing has been failing to capture the value these projects bring to a vast amount of different groups. If this value is successfully captured, special taxing districts can be set up or tolls can be established to help fund and finance projects (NHI,n.d.).

2.1.4 Intersection of Expanding Freight Operations & Public Acceptance

Despite the guidance documents that have been published attempting to resolve the persistent split between state and metropolitan transportation agencies and private sector members of the freight community, public officials remain unsure about how to best plan with the freight industry. This statement was reaffirmed at the 2011 Rail Conference hosted by the National Association of Counties (NACo) held in Lisle, IL on April 27-29. This conference was attended by public officials who had interest in better understanding the freight transportation industry, the railroad industry and each others' various roles. Throughout the conference, many public officials expressed the frustration and confusion they have encountered when planning with the railroad companies. Several public officials were at this conference looking for guidance about how to discuss railroad activity and freight transportation in a positive way with their constituents.

The challenges to freight planning expressed by public officials at the NACO conference may be the manifestation of the growing problem that is freight expansion and the public opposition it meets. Domestic and international trade is expected to significantly grow over the next two decades, as later discussed. More of this growth is expected to be due to increases in international trade, which means more freight will be moving greater distances as part of an extensive, global supply chain. All U.S. modes of transport have been experiencing increases in the amount of freight they move over the past few decades and will continue to see increases, but overall network capacity has remain relatively unchanged since 1975 (NHI, n.d.). Infrastructure expansion will be necessary to handle the increased

amounts of freight transported, but these projects have remained difficult to develop, largely for the reasons previously discussed.

2.2 The Growth & Impacts of Intermodal Freight Operations

2.2.1 Freight Growth

From 1960 to 2008, freight truck vehicle miles have increased by 107% while road capacity increased by only 13% during the same period which has contributed to congestion on U.S. roadways (FAF3, 2011). This trend is expected to continue as trucks are projected to transport 33% more freight tons by 2030 while building additional road capacity remains prohibitively expensive and trends against Federal and state environmental protection standards. Class I freight rail train miles have increased 22% from 1960 to 2008 while operating over 83% less system miles over the same time period (BTS, 2010; BTS, n.d.). This has led to increased traffic at highway/rail grade crossings and increased delay times for motorists. This is a trend that is expected to continue especially as freight rail tons are projected to increase 24% by 2030 (FAF3, 2011).

2.2.2 Intermodal Freight & Its Significance

The growth of intermodal freight has been the primary reason overall freight ton miles have increased at the rate that they have. Intermodal freight transport is the seamless movement of goods that utilizes different modes of transport such as trains, trucks, ships and airplanes (APL, 2011). Intermodal freight movement has been spurred by economic globalization, and international initiatives to standardize major components of the global trade network such as accepting measurement units and containerization that occurred in the 1960s. These events caused intermodalism to experience increased use, attention and investment (Rodrigue & Notteboom, 2008; Rodrigue, 2011). As discussed earlier, passage of major legislation such as Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users (SAFETEA-LU) further promoted the growth of intermodalism by dedicating Federal funding for the research and development of intermodal facilities (Adams et al, 2007).

Intermodalism offers several benefits to the freight network. By increasing coordination among the various modes of freight transport and allowing each to specialize in what they do best, intermodal operations allow for truck, rail and marine transport to become more efficient. Allowing for long haul truck traffic to be shifted off increasingly congested highways and onto rail cars is an example of this improved efficiency (McAnelly, Wickersham, & Blakey, 2006). As seen in Figure 1, intermodal terminals

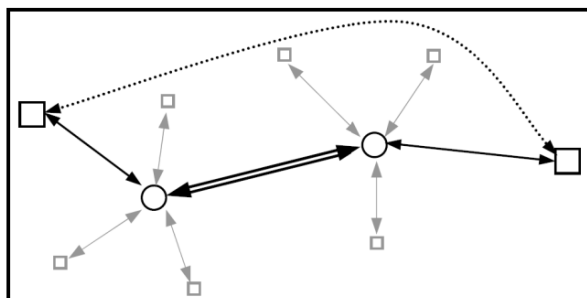


Figure 1. Example of the “hub-and-spoke” freight network as it relates to intermodal operations.

Source: (Wiegmans, Masurel, & Nijkamp, 1998)

are the “hubs” or circles in the hub-and-spoke freight network in the diagram. The boxes represent origins and destinations/shippers and receivers (Wiegmans, Masurel, & Nijkamp, 1998).

A major component of intermodal freight is handling and transporting *International Standards Organization* (ISO) containers, as well as trailers on

flat car. The typical trip of an ISO container involves the following three modes: ship, rail and truck. Intermodal freight operations handle ISO containers in a bulk fashion which reduces transport costs. Reduced costs reflect a decrease in the transit time of shipments, an increase in reliability, and an increase in flexibility (Rodrigue, Slack, & Comtois, 2011). As intermodal freight has grown, so has the freight network’s overall efficiency due to each of the various components becoming more efficient. Logistics practices have embraced intermodal operations which has allowed for increased communication between different modes and for carriers to offer lower rates to shippers (ICF & HLB, 2002). Additionally, the rise of intermodal freight operations has the potential to relieve the increasingly congested U.S. roadways by switching freight movements to rail instead of road (Handman, 2002).

Reflecting the rapid rise in intermodal freight, in 2003 intermodal cargo became the primary revenue generator for the Class I railroads. This signified a landmark change as for the past 150 years, coal had always been their primary revenue source (RITA, 2007). Growth in international trade has led to an increase in container traffic which required the development of a robust inland distribution

system for efficient handling and transport within the United States (Hofstra University, 2011). As containerized export and import volumes grew by 394% from 1980 to 2009, the development of intermodal facilities across the United States became critical in order to handle and transport this freight among the multiple modes involved in the supply chain (BTS, 2011). This has largely meant the expansion of marine ports that handle container ships and rail intermodal terminals that transport containers between trucks and trains.

2.2.3 Associated Economic Development

Due to the hub-and-spoke type network that intermodal freight operates within, direct service is limited between origins and destinations and concentrates major freight flows to intermediary points such as airports, rail yards and intermodal terminals (Barnhart & Laporte, 2007). This concentration of goods and traffic promotes value-added industries such as warehousing, transportation and light manufacturing to cluster near intermodal terminals. These industries can experience enhanced productivity by locating near intermodal terminals primarily by reducing trip length to and from the terminals, known as drayage, and locating in geographical areas where public incentives may be available (Schmidt, 2010).

Michael Porter, a professor in Harvard Business School, reaffirms this notion that individual, competitive companies of the same or interconnected industries benefit from locating in a cluster. Porter states that industry clusters, like those that develop around intermodal facilities, develop due to the right combination of labor skills, infrastructure, technology and public and private policy and practices. Porter argues that developing and promoting industry clusters is especially important for communities trying to boost economic development which can often be the case in the communities where intermodal terminals are located. Industry clusters can create an environment that makes it easier for businesses to get started, opposed to the businesses starting and locating on their own and away from the critical mass of related businesses and away from established resources such as highway and rail terminal access (Porter, 1997). By clustering, businesses have the potential to be more

productive which can lead to additional hiring and additional tax revenue generated for local municipalities (Morgan, 2004).

The clustering of transportation and warehousing businesses creates logistics zones. Three types of logistics zones require the presence of a nearby intermodal terminal. An inland port is comprised of an intermodal terminal that was built or updated concurrently with the development of nearby logistics companies and support services. The main advantage of an inland port is its ability to significantly reduce drayage, the operation of trucks transporting containers to and from intermodal yards, due to the direct integration of the terminal and the logistics park (Hostra University, 2011; Port of Seattle, 2008). A freight village, or integrated logistics center, is comprised of warehousing/distribution centers and light manufacturing typically in close proximity to an intermodal terminal, but also has a focus on developing nearby complementary services such as hotels, office space and restaurants. Freight villages are often under the management of a single entity (Strauss-Wieder, 2008). Lastly, an intermodal industrial park includes the warehousing/distribution centers and light manufacturing located in close proximity to an intermodal terminal. The terminal and logistics services do not necessarily develop together in this case (Rodrigue & Notteboom, 2008).

Development of logistics zones has been an item of interest to local government officials and economic developers because the establishment of logistics zones has significant impacts on the local economy, traffic congestion, and quality of life issues (Dock, Benedict, & Chandler, 2008; McAnelly, Wickersham, & Blakey, 2006). The New York Metropolitan Transportation Council has identified 64 integrated logistics centers in the United States and is working toward adopting a freight village-focused strategy for freight operations in the New York City area (Cerreno, Shin, Straus-Wieder, & Theofanis, 2008; Mann, n.d.). One such example is being planned for the southern suburbs of Chicago, IL, the Chicago Southland. The 2010 Chicago Southland's Green TIME Zone (GTZ) is a redevelopment plan for a 42-municipality area largely based on the economic development benefits that can come from intermodal freight movements. By combining an intermodal industrial park with the development of complementary services in close proximity to a ready workforce and good transportation connections,

local officials and planners of GTZ are working toward developing an integrated logistics center that has the potential to create and bring thousands of new jobs to their area (CNT, 2010).

Public officials will often utilize financial incentives to help their area develop these projects and/or become the chosen site for such a project. Popular public incentives that can be offered to entice intermodal developments include tax concessions, loan guarantees, employee tax credits, utility rate reductions, tax increment financing, and expedited permitting and approval, among others (Steele et al, 2011).

2.2.4 Adding “Blue-Collar” Employment

The local economic development associated with freight rail intermodal terminals can be especially appealing to communities whose residents have a lower educational attainment. The stable and decent paying jobs associated with these projects are of interest to public officials and economic developers who aim to lower unemployment in such communities. This is why the Chicago’s Southland’s Green TIME Zone has received ample public support. The GTZ found that in 2010 that within three miles of the primary intermodal terminal over 60% of area residents have a high school diploma, but no 4-year college degree. The U.S. unemployment rate from March 2010 to December 2010 was 9.6%. Unemployment rate varies by level of educational attainment. For example, the unemployment rate was 4.7% for workforce members with a bachelor’s degree and 11.2% for those members of the workforce without a bachelor’s degree (BLS, 2011).

As expansion of these types of projects causes significant benefits to the freight network and to the public, like almost any large infrastructure project, expansion of freight projects tend to be politically, socially and environmentally challenging. This last point was voiced by the public officials at the NACO conference; however, to maintain a competitive freight system, and national economy by extension, these projects along with freight capacity projects in general, must occur in such a way to best mitigate local impacts on host communities. Because of the recent growth and expected need for additional terminal projects, this thesis will review intermodal terminal projects in order to offer new

analysis of the established freight planning issues and concrete mitigation strategies to help overcome frustrations due to local impacts.

Additional information on this topic is included in section *3.5 Case Information* where labor information is discussed on the types of industries intermodal projects create.

2.2.5 Planning Issues Specific to Freight Intermodal Projects

As the general issues have been previously discussed regarding integrating freight into the transportation planning process, integrating intermodal projects present more specific challenges. Given the increasing trend to move freight by intermodal, these issues are coming up more often and are presenting more challenges to public officials, the general public, and providers of freight transportation. This section will address the following three major issues impeding the public sector from integrating intermodal projects into the planning process. Possibly the most important significance is the most fundamentally basic, and that is that regional and state transportation planning agencies are set up by mode, which is also how the Federal grants are set up. Given that planning agencies are set up by mode and that adequate planning of intermodal operations requires a strong planning process across modes and jurisdictions, limited coordination among different agencies and departments limits effective planning for intermodal projects. Thirdly, public support for intermodal projects is lacking and this hinders efforts to use public funds to help implement intermodal projects.

Federal transportation policy has a tradition of being formulated to address different modes of transportation individually. This presents a problem to intermodal freight operations because management of such a system must be done in a holistic way that integrates the needs of multiple modes. This issue can be traced back to its source by reviewing the sources of funding for each mode of transportation. An example would be that the surface transportation modes have a different authorization than aviation, which has its own authorization. While this separation may reflect the grouping of modes that have similar issues and characteristics, it contributes to the difficulty of

intermodal freight planning by increasing the burden on interagency coordination and seeking approval for Federal funding (U.S. GAO, 2007).

Intermodal freight projects tend to be major projects that require the use of multiple funding sources. If Federal funds are to be used, available grants for such projects are typically spread across different operating or planning agencies such as a state DOT and an airport operator. Both these organizations receive their Federal funds from programs that are part of separate authorizations which are the surface transportation authorization bill and the Federal aviation authorization bill. Because funding programs have different characteristics such as planning/programming timelines and matching requirements, intermodal projects are made difficult to plan for (U.S. GAO, 2007). This convoluted process may also contribute to the frustrations that members of the freight transportation industry have expressed about planning projects with public agencies.

Even within the authorizations of ISTEA, Tea-21 and SAFETEA-LU for the surface transportation modes, major funding programs were still organized by mode; although, indirect funding sources such as CMAQ exist. The lack of specific funding aimed at intermodal projects made for a difficult situation for state DOTs and regional MPOs to improve their planning for intermodal freight (U.S. GAO, 2007). Programs, such as the Projects of National and Regional Significance and the Freight Intermodal Distribution Pilot Grant Program, which can be used to provide funding for intermodal projects have often been granted due to congressional designation which limits the ability for the funds to go to the highest priority projects from a planning point of view. Funding and support for freight rail intermodal projects have been especially lacking from the Federal government and public sector in general.

Freight rail projects are largely financed by the private transportation sector and have a difficult time building support from the general public and consequently public officials to obtain public funding. The public holds the perspective that any public funds that are used for a freight project will primarily benefit the private freight industry and have minimal, if not negative effects on the public. This issue can be assessed in two ways. One of the persistent problems with projects that may or are perceived to

harm the quality of life for local residents, including but not limited to freight intermodal projects, is the issue of regional/national/international benefits verses local costs. As will be discussed later in this thesis and a focus of the case study analysis, freight intermodal projects present many challenges as locally unwanted land uses (LULUs) for local residents. Freight stakeholders have had a difficult time connecting how local quality of life is positively impacted by freight projects (U.S. GAO, 2007). This public opposition has the power to delay and alter project plans despite the system's need for the projects and the economic development benefits that can occur as a result of the projects.

To assist in countering public opposition and the general confusion as to what the public impacts are at different scales of freight projects, additional resources are needed to evaluate the benefits of freight intermodal projects in efforts to increase the amount of public funds made available. This problem extends beyond impacting privately held freight projects like intermodal terminals, but the supporting infrastructure of these terminals, that is under public jurisdiction, are under built and in need of improvements. However, the roads that connect intermodal terminals, such as rail yards, airports and ports, to the highway network often do not receive funding and result in an under built infrastructure not adequate to effectively serve the freight network. Intermodal connectors fail to receive adequate public funding for the same reasons freight rail projects have a difficult time receiving public funding, which is due to the lack of understanding on the side of the public how freight positively impacts the public. Public officials remain hesitant to spend precious, and politically sensitive, public dollars that may be perceived as benefiting private interests more than public interests (U.S. GAO, 2007).

2.2.6 Solutions to Planning Issues Specific to Freight Intermodal Projects

Increasing access to funding for freight intermodal projects has been recognized by Congress and funding and finance assistance programs have been put in place. While the last transportation authorization SAFETEA-LU, included programs that could be used for freight intermodal projects, the Freight Intermodal Distribution Pilot Program was the only program that made Federal funding available specifically for freight intermodal transportation projects. Projects for this program were

scored based on their ability to relieve congestion and improve safety. The Pilot Program made a total of \$150 million available (U.S. GAO, 2007).

While the Freight Intermodal Distribution Pilot Program was SAFETEA-LU's only program specifically for freight intermodal projects, other programs were written with freight in mind. The Projects of National and Regional Significance program provided \$1.8 billion for transportation infrastructure projects that produce benefits on a national or regional level. While this program had problems, like its funds being congressionally designated as earmarks, the program's language was explicit about facilitating international trade due to considering projects that have significant national benefits. This program represented a step in the right direction for the types of Federal programs needed for the development of freight intermodal terminals.

Other SAFETEA-LU programs such as the Congestion Mitigation and Air Quality Improvement program (CMAQ) and the Surface Transportation Program (STP) make it possible for freight intermodal projects to compete against passenger transportation projects for Federal funding. CMAQ funds are awarded to projects that reduce transportation-related emissions in areas that have poor air quality. One of the public benefits of freight intermodal projects is their ability to capture freight that may have travelled by long haul truck and ship it by rail which is more fuel efficient. STP funds can be awarded to rail freight projects, such as highway/rail grade separations, due to safety improvements. While neither of these programs have the purpose of increasing freight mobility, freight mobility can be positively impacted by Federal funds because of the public benefits that can result from freight intermodal projects such as less emissions and improved safety (U.S. GAO, 2007).

As steps have been taken to increase the amount of funding available for freight intermodal projects, the roads that connect the projects to the rest of the highway network, known as intermodal connectors, remain underfunded and in disrepair which decreases freight mobility. As discussed earlier, despite intermodal connectors being publicly owned and eligible for several Federal grants, public officials are hesitant to use scarce public dollars on projects largely seen to benefit the private sector.

U.S. Department of Transportation (U.S. DOT) tried to improve this situation by proposing every state DOT use 2% of their funding from the National Highway System program for this purpose; however, the rule never took effect (U.S. GAO, 2007).

The political hesitation that prevents public money from being used on intermodal connectors stems from public officials, as well as the general public, having a lack of understanding of how freight benefits the public and concerns over quality of life issues. There has been a lack of public resources at regional, state, and Federal transportation planning authorities to improve the evaluation of impacts of intermodal freight projects on the public. Specific impacts to the public on each scale, local, regional, national, and international, are needed in order to educate and convince the general public how the quality of their daily life is dependent on an efficient freight network and allow public officials to feel politically comfortable using public money to support freight intermodal projects (U.S. GAO, 2007).

Recognizing how freight intermodal impacts affect the public at different scales is a critical part of better evaluating freight public impacts. The issue of national vs. local benefits and costs is at the foundation of why freight intermodal, and general freight, projects meet resistance from the public. Acknowledging this issue and measuring impacts based on local and national is critical to better understanding freight impacts and helping the public understand how their lives and property will be impacted. Data analysis across scales requires a certain level of interagency coordination, as does freight planning in general. Due to funding structures, lacking resources, and misunderstandings about freight, different agencies can have a difficult time adequately coordinate to successfully execute a freight-related project.

U.S. DOT has made available some data on freight intermodal transportation. The Bureau of Transportation Statistics' (BTS) Commodity Flow Survey and FHWA's Freight Analysis Framework provide a great amount of information on freight flows and their characteristics (U.S. GAO, 2007). The Commodity Flow Survey provides state and national level data on domestic freight flows and their characteristics, such as value, origins and destinations, and weights, among others (RITA, n.d.). The

Freight Analysis Framework uses the data collected in the Commodity Flow Survey, among other sources, to create a comprehensive “snapshot” of freight flow movements at the state and major metropolitan levels for all modes of transport (FAF, 2011).

Several efforts have been made to transform agency structures to be more conducive to intermodal transportation planning for passenger and freight. In 1995 US DOT considered a reorganization of its department that would consolidate five surface transportation operating administrations including the FHWA and the Federal Railroad Administration (FRA). The purpose would have been to more effectively work toward decision-making goals regarding intermodal operations that were included in ISTEA. It was determined that this approach would not have resulted in a more effective way to plan for intermodal resulting in an incremental approach and was ultimately dismissed.

In attempts to increase intermodal freight collaboration at the local, region, and state scales, the Transportation Planning Capacity Building Program was established in part by FHWA. The program was aimed towards transportation professionals to help them create plans and programming that reflected the needs of intermodal freight. The Program set up a website where information regarding Federal planning regulations and techniques on including freight interests is made available.

2.3 Freight Intermodal Project Development & Land Use

2.3.1 Freight Transportation and Land Use

As issues regarding intermodal freight and transportation planning have been previously discussed, the development of freight intermodal terminals presents unique challenges to local land use. MPOs and DOTs have difficulty ensuring these facilities will be compatible with adjacent land uses. Conversely, local and regional transportation agencies and bodies of government have a difficult time ensuring that land use decisions promote freight mobility and are consistent with the needs of freight. The land use, economic development and overall community impacts of these projects require

cooperation among many units of government and with freight stakeholders which includes members of the private sector.

MPOs have made progress using the discussed techniques to integrate freight planning into their long range transportation plans; however, less progress has been made with the programming and

Table 4-5. Relative importance of common stumbling points to project development strategies.

Needs Identification Strategies	Data	Private Sector	Freight Expertise	Institutional Support
Addressing NEPA Requirements within Freight Projects	●	●	○	●
Incorporating Context Sensitive Solutions (CSS) into Freight Projects	●	●	○	●

Key: Less Important ○ → ● → More Important

Addressing NEPA requirements within freight projects.

Data	Private Sector	Freight Expertise	Institutional Support
●	●	○	●

Figure 2 Identified stumbling points when conducting NEPA process for the development of freight projects
Source: Cambridge Systematics, Prime Focus, & Heanue, K. (2007). Guidebook for integrating freight into transportation planning and project selection processes. *National Cooperative Highway Research Program*, Report 594. Retrieved on June 8, 2011 from <http://www.dot.ca.gov/hq/tpp/>

Policy Act (NEPA) reviews, where several alternatives must be considered and new stakeholders are brought into the process, frustrating because they can result in significant project delays. NEPA reviews are necessary for projects that receive Federal funds (U.S. EPA, 2011).

Figure 2 also shows that the private sector identifies incorporating Context Sensitive Solutions into freight projects as a stumbling point in the process. This refers to the collaboration and interdisciplinary planning among the stakeholders of how the development of the facility impacts its physical settings. The purpose of this process is to emphasize planning for the project's context and the

project development of freight projects. When it comes to implementing intermodal projects such as freight rail yards, common stumbling points are impacts to local land use and securing public funds. Figure 2 shows the importance of these stumbling points, in addition to others, as rated by the private freight sector. The private sector can find the process of National Environmental

values of the impacted communities which is achieved by providing opportunities for early coordination and consensus-building among the different stakeholder groups (Cambridge, Prime Focus, & Heanue, 2007).

2.3.2 Freight Intermodal Terminals as LULUs

Freight rail intermodal yards can be categorized as LULUs because they function as a large industrial facility and are often located near incompatible land uses, such as residential. Intermodal terminals are often sited in urban or suburban areas due to existing rail and highway infrastructure and because of distribution needs as part of the hub-and-spokes pattern within which terminals develop (Wiegman, Masurel, & Nijkamp, 1998). Locating these facilities and their operation in populated areas threatens communities' quality of life. A LULU can be described as any use of land that is unwanted by local stakeholders (Schively, 2007). This can include a wide variety of land uses that can include freight intermodal terminals, but is by no means limited to such projects. Almost any land use can be considered undesirable due to the existence or perceived existence of a deleterious effect a land use might impose on its surrounding land uses.

Common and well known LULUs include nuclear power plants, prisons, casinos, almost any transportation facility including airports, highways, and rail lines, oil refineries, and the list goes on (Rephann, 2000). Important to note is that most, if not all of these common LULUs serve a function to the greater public outside of their potential hyper-local negative effects. The negative effects of intermodal terminals include increased local truck traffic, increased air, noise/vibration and light pollution, increased train traffic at local grade crossings, and conflicts with local land use, to name a few. These issues are often referred to as *Not In My Backyard* (NIMBY) issues (McAnelly, Wickersham, & Blakey, 2006).

Bryson, Crosby, and Carroll summarize LULUs in a widely accepted manner in that LULUs produce benefits that are perceived to be largely dispersed and produce costs that are perceived to be locally concentrated (Bryson, 1991). For this reason, the land uses listed above such as power plants,

transportation facilities and casinos will almost exclusively be categorized undesirable by someone. Despite these land uses being undesirable and resisted by some groups, they ultimately need to get built somehow and somewhere. The planning process that unfolds for siting LULUs is worth reviewing to understand what helps the process move forward and what does not help the process.

In the *Economic Impacts of LULUs*, author Terance Rephann assessed five types of LULUs including dams, highways, nuclear power plants, prisons and casinos. The cases were spread over a four decade time span from the 1950s to the 1990s. Rephann found that for every type of LULU the harmful effects on the host community were never as bad as opponents to a project predicted. However, the author also found that benefits of the project were not as great as predicted. This finding should be noted as it eludes to the manufactured hype surrounding projects (2000).

Hilary Boudet and Leonard Ortolano's article *A tale of two sitings: Contentious politics in liquefied natural gas facility siting in California* uses a political process model to analyze the mobilization efforts of citizen groups against LULUs. By systematically searching newspaper articles, public meeting transcripts, and letters, in addition to interviewing stakeholders, the authors examine two siting cases of the same liquefied natural gas facility in California. The authors find that in order for citizen mobilization to occur against a natural gas facility, threat to quality of life and property value, political opportunity, resources and appropriation of those resources, and loss of trust have to occur in the right combination. The authors find that the sequence of events is critical to mobilization efforts by NIMBY groups (Boudet & Ortolano, 2010). For the purpose of this thesis, understanding the sequence of events in which freight rail projects are planned will be critical in the determination of remedies that have been most effective.

2.3.3 NIMBY Impacts on Freight Projects

The term *NIMBY* often elicits a negative connotation from developers, public leaders, and the public, despite members of the public most actively being NIMBY participants. According to McClymont and O'Hare, when a community group or a community's concerns are described as NIMBY, a stereotype

prevails that the NIMBY concerns are ill-informed, selfish and should be dismissed (2008). The Advisory Commission on Barriers to Affordable Housing during the 1990s described NIMBYism as, “The NIMBY Syndrome, is often widespread, deeply ingrained, easily translatable into political actions, and intentionally exclusionary and growth inhibiting (Utt, 2002, p. 1).” The Commission’s intention of delegitimizing NIMBYism was to distinguish it from true, legitimate civic participation which protects real concerns such as public health, community attractiveness and safety. The Commission also includes protection of property value as a real concern that elicits civic participation (Utt, 2002).

The Commission sheds light on the controversy regarding whether NIMBY concerns are valid or invalid; however, the legitimacy of NIMBYism is a debate for a different paper as the topic has many conflicting critiques (Horst, 2007; Utt, 2002; Gonzalez, 1992; Gibson, 2005). Whether experts on NIMBYism would consider some communities’ reactions NIMBY or not, this paper is concerned with how the development process of intermodal terminals accounts for community concerns and how and why communities respond to the development of intermodal terminals the way they do. As mentioned earlier, intermodal terminals can disproportionately bring negative effects to a local community. Prioritization of community concerns and embracing a more open/understandable process may be critical when railroad companies and towns are trying to go ahead with developments of intermodal terminals in order to avoid project-delaying community resistance.

The development of intermodal facilities is vulnerable to community resistance because facilities often have to be located in close proximity to regional markets to maximize efficiencies of the intermodal model (Kaufman, 2008). The hub-and-spoke structure of the intermodal freight network requires intermodal facilities to be located near regional markets which concentrates negative effects such as traffic, pollution and accidents around communities that host the terminals (Hofstra University, 2011). Class I railroads have had their intermodal projects delayed or changed due to resistance met from communities concerned over quality of life issues. Communities have been able to block permits, withhold the sale of public land, and in general delay or alter the plans of Class I railroads seeking to build or expand multi-million dollar intermodal facilities and logistics parks (Kaufman, 2008).

Community resistance in Memphis, TN caused Norfolk Southern Railroad to change the preferred location of its intermodal yard as local residents accused the railroad company of being *quiet* regarding its plans. The public accusing railroad companies of not being visible with their plans and the overall process of intermodal development are common accusations and common sources of the public's frustration regarding such projects (Marcum, 2011; MDOT, 2011; Smith, n.d.;).

2.3.4 Overcoming NIMBY

Before reviewing specific remedies that have been implemented in the LULU siting and development process, it is critical to understand what role perception plays in the process. In the article *Understanding the NIMBY and LULU Phenomena: Reassessing Our Knowledge Base and Informing Future Research*, author Carissa Schively describes the three most influential categories perception is found in which include the perception of impacts, other participants, and the siting process. Schively emphasizes the importance for the planners and developers of a LULU to understand how the concerned public defines what threats are. For example, are they more concerned with impacts to the environment, health or property values? Schively argues that what the public will react to is more important for the progress of the project than knowing what the actual impacts will be from the LULU. In addition to perception of risks and impacts, the public's perception of the participants in the planning process is critical. Knowing what the opposition thinks about the supporters, or what the opposition thinks about the experts, is an important way of determining if all and to what extent the different sides trust each other. Trust is a key variable affecting perception of participants and the amount of contention associated with the process. Schively continues to explain that the perception of the siting process is critical to how the public responds to a LULU development. If the process is not perceived to be open and fair, it is likely to meet opposition no matter what the impacts of the project are (Schively, 2007).

Effectively presenting truthful information has been a tool used to try and discourage NIMBY resistance to projects. A common LULU not yet mentioned is multi-family residences like apartment buildings. These developments often meet local resistance, but the demand for multi-family housing is growing. The National Multi Housing Council (NHMC) knows this problem well and has developed tools

that try to overcome NIMBY opposition. Multi-family housing is often associated with a decrease in quality of life due to the perception of increased traffic, crime, and a decrease in surrounding property values. NHMC issued a white paper citing newly completed studies that associated multi-resident housing development with improved local quality of life, as well as fulfilling a national need for multi-family housing. NHMC wanted the new information to be included in presentation and communication materials by developers and planners to help the public understand how the establishment of multi-family housing would make their lives better. The white paper emphasizes the importance of communicating that if designed properly, multi-family housing can not only fit in harmlessly into an existing neighborhood, but help improve that neighborhood (NHMC, 2006). This illustrates possibly the most basic step in combating NIMBY behavior, and that is making sure to communicate the correct information so different stakeholder groups have the same facts.

Of course, other tools likely have to be used to overcome NIMBY behavior often due to lack of trust among different stakeholder groups. As explained earlier by Schively, lack of trust will cause good information to be discredited by varied stakeholder groups (2007). The nuclear power industry understands the importance of trust when it comes to not just siting nuclear plants but promoting nuclear energy in general. In an article by M. V. Ramana, the author argues that despite the safety record of nuclear power plants and the commitment by industry proponents to communicate that information to the public, major events like the Fukushima failure in Japan and a general distrust in government regulatory agencies have caused support for nuclear power to significantly decline in the past 10 years (2011).

Government and Community Affairs Strategy (GCA), a public affairs firm, has long standing expertise on successfully overcoming NIMBY opposition for its clients' projects. GCA has published a general guide that the company follows when working on projects that need to overcome NIMBY opposition. GCA stresses the importance to identify and mobilize supporters of the project right from the start of the project going public. The success of this approach is based on the idea that humans follow the crowd and will be more likely to be in support of a project if there is an active group in favor

of the project. Identification of supporters can be done by recognizing which group will directly benefit from the project. For example, these groups could include construction workers, suppliers, local businesses, real estate community, etc...

GCA also explains that public opposition to a project stems from the following four main causes: misinformation, emotional needs, conflicts of values, and conflicts of interest. Correcting misinformation is the simplest issue to overcome and should be done immediately. Information must be presented in a personal way to relate to the audience. Many techniques can be used, such as holding several meetings in the living rooms of the public and ensuring two-way conversations. Holding living room meetings about projects with community leaders can be especially critical and effective. Providing inclusion for relevant stakeholders is the essential element to avoiding public opposition (Noto, 2010).

The most difficult causes of public opposition are conflict of value and conflict of interest. Part of the solution is identifying what are the key values members of the general public hold and how the project might conflict with those values. As for conflict of interest, when persuasion does not work to overcome opposition, it is important to positively enter into a stage of negotiation. GCA says to avoid concessions in the negotiations stage, as concessions can be very costly and ultimately ineffective. The most important impact of a negotiations stage is to produce a project that is more responsive to community concerns, which makes it easier for elected officials to approve the project amid public opposition (Noto, 2010).

2.3.5 Introduction to the Development Process

In general, site selection is a part of the development process where local governments can have a significant impact on the proposed project. This process begins with needs identification on the part of the developer which for freight projects typically involves consideration of the distribution network as a whole. To consider how one freight project impacts the network, the developer will consider a variety of questions pertaining to how the developer wants to impact the distribution network, what the needs of their customers will be, and how are competitors operating. When planning for major projects such as an intermodal facility, the time horizon is 20-plus years (Steele et al, 2011).

When choosing a community to site the project, a set of base criteria are used that can immediately disqualify an area such as existing or potential access to critical transportation infrastructure. The site selection process goes beyond consideration of infrastructure, and also considers workforce, regulatory environment, utilities and cost of real estate. The development team collects this data which may involve a *Request for Information* to local communities, which can typically be supplied through an economic development agency among other sources to confirm accuracy. Developers will often meet with local government and public officials to discuss:

- Companies with similar operations
- Permitting and regulatory assistance available
- Additional site identification
- Local utility requirements
- Other topics as appropriate

Developers will also go after potential incentives to improve project feasibility. Tensions can increase due to lack of commitment from the developer in order to preserve the possibility of incentives, and the town may request clawbacks to ensure economic development is created as stated (Steele et al, 2011).

As discussed earlier, developers prefer that a community already has regulation and land use zoning that explicitly permits and promotes the freight intermodal facilities. These types of facilities often require special zoning to allow for 24-hour operation and various conflicts that may arise with adjoining land uses. Developers are more attracted to communities where regulations and permitting is made clear. Developers want to know what obligations they have to meet and have a clear understanding of how long a timeline is necessary to meet those obligations. If local government can set this up correctly, developers see it as an incentive to locating a facility in an area (Steele et al, 2011).

Local government and public officials can take proactive measures to help facilitate the development process and existence of intermodal freight facilities by managing any conflicts with the general public. This largely involves local government working directly with community interests to

address potential challenges. Promoting an understanding of how problems can be mitigated and the benefits an intermodal freight facility can produce is critical. A crucial factor of general public acceptance also depends on the commitment from the developer to work with the community regarding any issues. A greater amount of public acceptance of a project can lead to additional incentives offered by public officials. Popular public incentives that can be offered to entice intermodal developments include tax concessions, loan guarantees, employee tax credits, utility rate reductions, tax increment financing, and expedited permitting and approval, among others (Steele et al, 2011).

As discussed earlier, NEPA requires developers to follow a formal process to assess and possibly mitigate proposed Federal activities, which would include a freight intermodal related project that receives Federal funds. The NEPA process is based on a successful public involvement process, which can be difficult for freight related projects to achieve. The public involvement process must include the identification and outreach to both public and private sector stakeholders. As discussed earlier, the public planning process is not always conducive to the proprietary and competitive ways of a freight company working to develop a project. The FHWA recommends public officials to contact the public affairs department at a Class I railroad's headquarter location, while railroad officials should contact the rail division of state DOTs for information. Local and regional chambers of commerce will also serve as valuable resources to get in contact with an area's business community (FHWA, 2010).

Most relevant to this project is the *Freight Impact Analysis* section of the scoping part of the NEPA process. The *Freight Impact Analysis* considers how a freight project may affect freight operations and "social and economic" considerations. This analysis is included in the *Affected Environment* section and the *Environmental Consequences and Mitigation* sections of the NEPA process. FHWA recommends that if the proposed freight project causes conflicts with the local community that resolutions be worked into the project study early in the process. The *Environmental Consequences* section should include both beneficial and negative social, economic and environmental effects that are probable to occur due to the project and its alternatives.

While every freight project is different and is developed under different circumstances, typical issues that can require mitigation include increased train traffic on a rail line, increased truck traffic on major and/or minor roads, and changing truck patterns due to a proposed freight project. Mitigation measures can make use of physical barriers to block the unwanted noise, light, or pollution of a proposed project. Barrier walls are commonly used to block unwanted noise and sights during the construction process and for the new freight operations. Mitigation measures can also include rerouting an area's transportation network or the building of grade separations to minimize the interactions between the passenger transportation system and the freight transportation system. Improvements to pedestrian and bicycle access in the impacted area can also be considered as ways to mitigate safety and congestion issues (FHWA, 2010).

A common way to mitigate air quality impacts due to increased freight operations is to include truck parking locations that allow the trucks to idle while also having their engines turned off. This is an example of a mitigation measure that needs to be included in a project's scope so it can be adequately reviewed and financed (FHWA, 2010).

2.4 Literature Review Summary

Key information reviewed in the three main parts of the Literature Review (Section 2.1 Freight Transportation Planning, Section 2.2 The Growth and Impacts of Freight Intermodal Operations, & Section 2.3 Freight Intermodal Project Development & Land Use) was used to guide the research methods and the development of the questions that were posed to railroad and public officials during the stakeholder interviews. The purpose was to use information from the literature review to create questions that applied established methods of reducing public opposition, utilizing mitigation measures that protect quality of life, and promoting economic development to freight intermodal projects. A diagram has been included in Appendix D of this document to visualize which information from the literature review was used in the development of subsequent parts of this thesis.

2.4.1 Key Information Used to Develop Research Methods

In selecting the type of projects to include as case studies, freight intermodal terminals were selected because the public impacts of freight projects needed to be largely felt by public officials as freight intermodal was identified to do in Section 2.2 The Growth & Impacts of Intermodal Freight Operations and Section 2.3 Freight Intermodal Project Development & Land Use from the literature review. Section 2.2 identified the economic development opportunities that freight intermodal projects can create, while Section 2.3 identified the public opposition that could be created by intermodal freight projects.

In selecting to interview representatives from railroads and public officials, the information reviewed in Section 2.1 Freight Transportation Planning from the literature review was used. In Section 2.1, the relationship between public officials and freight officials was established and examined for how it impacts the planning of freight projects. The challenges facing this relationship, such as freight officials and public officials being beholden to different audiences and operating on different planning horizons, suggested the relationship should be reviewed for its impacts at the project level, therefore representatives from each of these two sides were chosen for the stakeholder interviews.

2.4.2 Key Information Used to Develop Interview Questions

In development of the interview questions about applying public opposition methods to freight intermodal projects, key information was used from Section 2.1.2 Challenges of Integrating Freight into the Transportation Planning Process and Section 2.3 Freight Intermodal Project Development & Land Use on the established methods of mobilizing supporters, delivering good information, and increasing freight industry knowledge among public officials.

Information from Section 2.2 The Growth & Impacts of Intermodal Freight Operations was used to develop interview questions regarding the promotion of economic development. Economic development measures included the offering of public financial incentives to freight project developers,

preparing local plans and zoning to be conducive to freight development, and the financing of supporting infrastructure projects.

The challenges facing the relationship between members of the private freight industry and public officials from Section 2.1.2 Challenges of Integrating Freight into the Transportation Planning Process were used to develop the questions on the topic of implementing effective mitigation measures to protect quality of life. Challenges included the lack of public support for freight projects, unknown funding plans among various stakeholder for supporting infrastructure, and having members of the private freight industry respond to different audiences than public officials. Section 2.3.1 Freight Transportation and Land Use and Section 2.3.3 NIMBY Impacts on Freight Projects provided the necessary information to how land uses and LULUs conflict. Section 2.3.3 provided information as to how the location of intermodal terminals on metropolitan fringes can contribute to conflicts with residential developments.

3. Methods

3.1 Research Design & Question

Through examination of two case studies of the development of freight intermodal projects, this thesis will conduct posttest only non-experiment research to answer the question, **“How are municipal/county officials and freight developers planning for the following common development issues of freight intermodal terminals: reducing public opposition, implementing mitigation measures, and promoting economic development?”** A critical aspect in answering this question will be identifying how the working relationship between members of the freight industry and public officials impacts these common development issues. This question will be answered by reviewing two cases of freight intermodal projects to gain a better understanding of which mitigation measures and economic development tools were seen to be most effective by the public officials and freight developers involved with the projects.

This thesis identifies the challenges inhibiting the full integration of freight into the transportation planning process and the sources of frustration surrounding the ability for public officials and developers of freight projects to successfully plan freight projects that benefit both the freight network and communities.

3.2 Data Sources

Data for the two selected case studies will be gathered from the following sources:

- Local & National Newspapers
- News & Journal Databases
- Agency & Municipal Plans
- Agency & Municipal Budgets
- Stakeholder Interviews

3.3 Case Selection

Two cases of the development freight intermodal terminals will be selected. Cases will be chosen based on the following set of criteria:

- Type of Project
- Year of Project Completion
- Availability of Information
- Contact Relationship

Only projects that involve a new intermodal terminal and plan for warehouse development will be considered for selection. This will ensure that significant impacts, that are both positive and negative, will be felt by both the public sector and the railroad company.

During the interviews, questions will require the interviewee to apply different remedies and techniques, that have been identified in the literature review, to their planning situation and discuss the pros and cons. These interviews will be used to better understand how the common challenges of planning with the freight industry can be addressed to promote economic development, implement mitigation measures, and reduce public opposition.

3.4 Interview Selection

I will interview a minimum of two people for each case, which will result in a minimum of four interviews. For each case, a railroad official and a public official will be selected. Ideally, the railroad official will be within the company's public affairs department and the public official will be at the county level. I used my network of current contacts when selecting individuals to interview. **This project has gained the approval of the Institutional Review Board (IRB).**

3.5 Limitations

While deciding to interview public officials and railroad representatives from the two case studies allows for the research question to be answered, not interviewing any members or representatives of the general public limits information gathered from the interviews. Interviewing the latter group would have introduced a perspective on the topic that this study does not consider, although a summary of public opinion for each of the cases is included in the Case Information Section. Information gathered directly from the general public would have also been one more tool to manage bias in the interviews.

Selecting two cases to review based on the case selection criteria discussed earlier was within the scope of this project, but increasing the number of cases could make a more representative project. While only two cases were chosen, this project used the information gathered from the case studies in addition to previous research to answer the research question.

The author/principal investigator's inexperience at conducting semi-structured interviews is a limitation of this project. Interview inexperience may have affected the author's efforts to manage bias and solicit critical information. However, the author was able to solicit information from the interviews that gave additional insights to the topic and answer the research question.

3.6 Case Information

3.6.1 Joliet Intermodal Terminal – Background Information

Joliet Intermodal Terminal and CenterPoint Intermodal Center is a 4,685-square foot intermodal terminal and logistics center project completed in 2010 in Joliet, IL within Will County (CenterPoint Properties, n.d.). The terminal had a 500,000+ annual lift-capacity for intermodal containers and cost \$367 million to construct primarily financed by Union Pacific and in part by CenterPoint Properties (UP, n.d.). CenterPoint pledged \$200 million toward development of the project and will be the recipient of revenues sequestered due to the Intermodal Facilities Promotion Act (Landis, 2009).

In 2010, Joliet had a population of 147,433 and a median household income of \$60,714 (U.S. Census Bureau, 2010; JADA, n.d.). The terminal is located approximately 60 miles southwest from Downtown Chicago and immediately southwest of downtown Joliet, as seen in Figure 3.

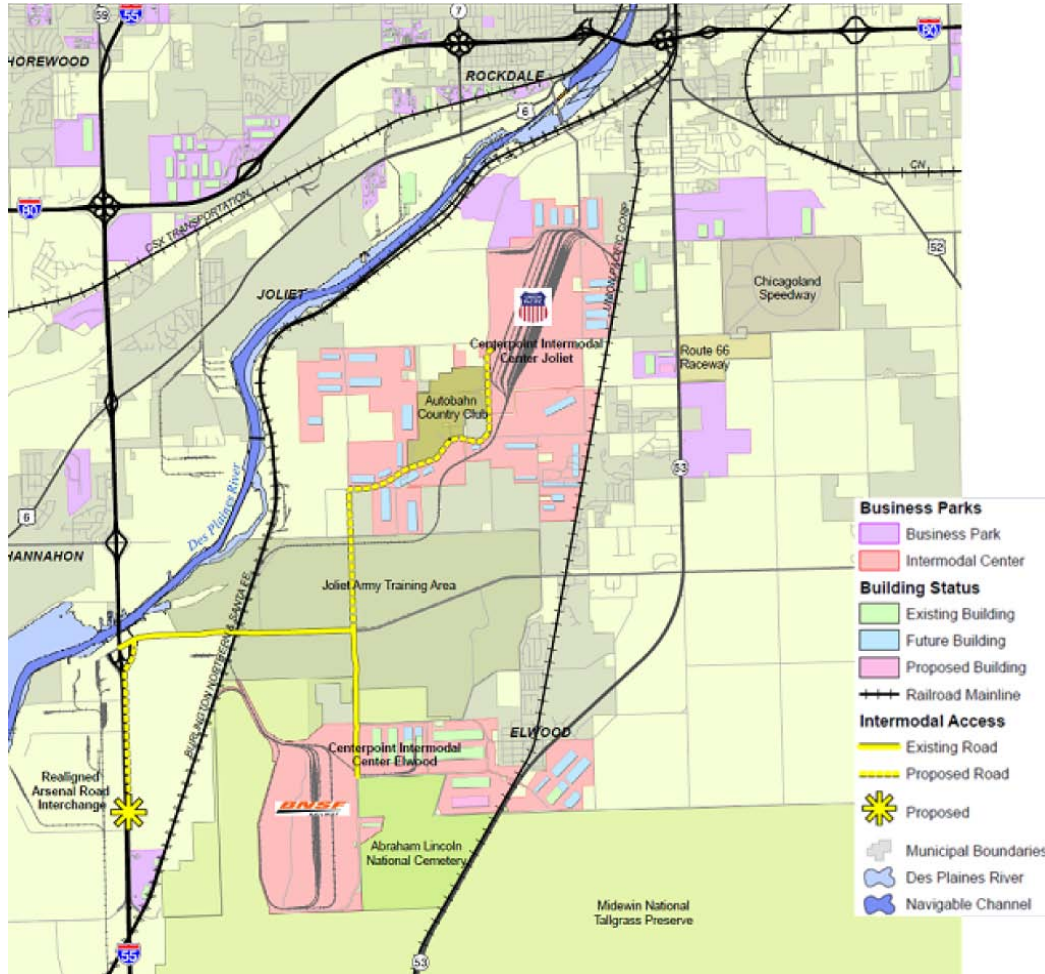


Figure 3 Location of the Union Pacific Freight Intermodal Terminal in Joliet, IL.

Source: AECOM, Tammen Group, & Ruettiger, Tonelli & Associates, Inc. (2010). *Will County Center for Economic Development – Inland Port Impact Study*. Retrieved from http://www.willcountycd.com/midwestempire/inland_port_study.aspx

3.6.2 Joliet Intermodal Terminal – Major Moments in the Development Process

In August of 2008 CenterPoint Properties publicly announced that the City of Joliet approved the project plans for the terminal and warehouse development. This included an annexation agreement by Joliet (World Trade, 2008). August of 2008 was the earliest date found for a public announcement of this project. In August of 2009 Illinois Governor Pat Quinn signed the Intermodal Facilities Promotions Act, which captured the income tax revenue of employees of the intermodal project to be placed in an Intermodal Facilities Promotion Fund. Money in this Fund can then be accessed by eligible developers, which in this case would be CenterPoint, and would allow CenterPoint to get reimbursed for the supporting infrastructure improvements that had to be made upfront (IGNN, 2009). Construction started on the project in the same month, August of 2009 (UP, 2009). In August of 2010 Governor Quinn announced the major construction project of I-55 and Arsenal Road which were critical projects that needed improvements in order for the terminal to operate as desired in regards to truck traffic. The estimated cost of the projects were \$68.7 million and funded through *Illinois Jobs Now!* Program (IGNN, 2010). The terminal was able to open for operation in October of 2010 (World Trade, 2010).

3.6.3 Joliet Intermodal Terminal – Economic Impacts

The Joliet intermodal project, including the build-out of warehouse development, is expected to garner approximately \$2 billion in private investment and generate up to 14,000 new jobs over the next 10 to 15 years (AECOM, Tammen Group, & Ruettiger, 2010). The jobs will belong to the warehousing and storage, transportation support services, and the rail transportation support services industries (Cambridge Systematics, 2008). See Table 1. for information on wages and education/training needed for these industries.

Table I Employment Information for Select Industries

Industry	Typical Wage	Education/Training Required
<u>Material Moving Occupations</u>	\$16/hour	<ul style="list-style-type: none"> • Low educational attainment required & skills can be learned informally on the Job • Some states requires a written skills test • Operation of some equipment requires certification
<u>Rail Transportation Occupations</u>	\$24/hour	<ul style="list-style-type: none"> • Minimum GED • Formal on the job training programs • Federal licenses may be required
<u>Truck Transportation and Warehousing</u>	\$16/hour	<ul style="list-style-type: none"> • Minimum GED • Post-Secondary education for management • Most state require special licenses for truckers • Operation of some equipment requires certification

Source: Bureau of Labor Statistics. (2009). *Career Guide to Industries, 2010-2011 Edition*. Retrieved from <http://www.bls.gov/oco/cg/cgs021.htm>

3.6. Kansas City Intermodal Facility - Background

The Kansas City Intermodal Facility is a 1000-acre intermodal terminal and logistics center project being built in Edgerton, KS within Johnson County and is scheduled to be completed in 2013 (BNSF, 2011; BNSF, 2006). The terminal will have an initial 500,000 lift capacity with possibility for future expansion and cost \$154.3 million (BNSF, 2006). BNSF will invest approximately \$200 million in the facility and infrastructure (BNSF, n.d.).

In 2010 Edgerton had a population of 1,671 and a median household income of \$60,938 (U.S. Census Bureau, 2010). BNSF Railway will own and operate the terminal. The terminal site is located approximately 30 miles southwest of Kansas City, KS. The terminal was originally proposed in an unincorporated area of Johnson County on land that was originally set to be annexed by Gardner, KS. However, Gardner decided not to annex the land that would contain the terminal, and Edgerton, KS decided to annex the land. See Figure 4 for the locations of both towns and the terminal site on the next page.

The BNSF facility was proposed on a wetland site and therefore needed to obtain a Section 404 Permit from the U.S. Army Corps of Engineers. The 404 Permit is a section of the Clean Water Act that regulates the discharge of dredged, excavated, or fill material in wetlands and other U.S. waters (MDA, n.d.).

3.6.5 Kansas City Intermodal Facility – Major Points in Development Process

BNSF publicly announced in 2005 that it was looking to site a new intermodal facility at one of two sites in Gardner and decided on the preferred site (the present site) in 2006. In 2007 BNSF named Allen Group as the developer of the logistics park which would be developed as part of the overall intermodal project, in addition to the terminal itself. By 2008, the Gardner City Council had voted to annex the BNSF property and become responsible for providing services as well as receiving the tax benefits of the project (Drovetta, 2009). Also in 2008, the State of Kansas agreed to finance the necessary interchange improvements at I-35. Despite the progress made with the annexation and supporting infrastructure improvements, in 2009 BNSF announced that the project must be delayed due to the slowdown in the national and global economies. By August of 2009, the Gardner City Council had undergone elections resulting in a change in the council make-up and ultimately a change in opinion on the intermodal project. The Council voted to deannex the BNSF property which forced BNSF, Allen Group, and Johnson County to enter into new negotiations with a new town.

In December of 2009 the U.S. Army Corps of Engineers issued BNSF the 404 permit based on review of the Environmental Assessment of the project that determined the project was in the public interest and was the least environmentally damaging alternative that would not have significant human impacts (USACE, 2009). In March of 2010, the Edgerton City Council unanimously annexed the BNSF property which contributed to the commencement of construction in March 2011 and an expected opening in late 2013 (Hendricks, 2009).

3.6.6 Kansas City Intermodal Facility – Economic Impacts

The Kansas City Intermodal Facility and logistics park are expected to create 7,471 new jobs in Edgerton, 12,180 new jobs in Johnson County, and 13,230 new jobs in the state of Kansas. Like Joliet, jobs will be created in the warehousing and storage, transportation support services, and the rail transportation support services industries. Edgerton is expected to receive \$3.46 million annually and Johnson County is expected to receive \$72.2 million annually because of increased tax revenues (BNSF, 2011). See Appendix C for an explanation of how these impacts were calculated.

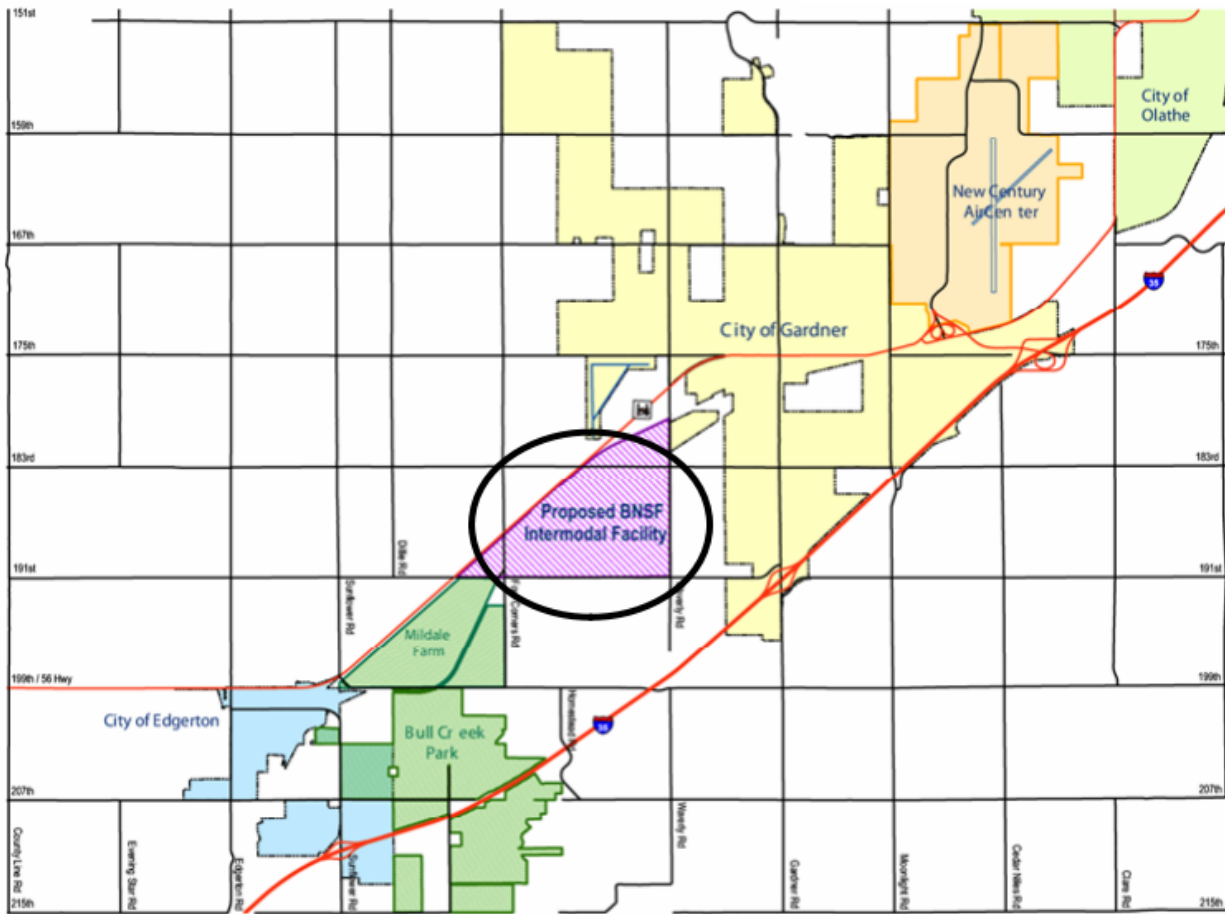


Figure 4 Location of the Burlington Northern Santa Fe Freight Intermodal Site in Edgerton, KS.
 Source: Burlington Northern Santa Fe. (2011). *Kansas City Intermodal Project*. Retrieved from
http://www.thinksouthwestjohnsoncounty.com/uploads/media/BNSF_BA_Jun29_2011.pdf

3.6.7 Concerns of General Public

The scope of this thesis did not include conducting interviews with members of the general public or community groups involved in the two case studies. Interviews were conducted with county officials and railroad officials only. By reviewing public comment documents and news articles on the cases, a summarized account of the public concerns for the projects are given as follows.

For the Edgerton case, based on review of the public comments section of the Environmental Assessment completed for the Edgerton intermodal project, the concerns of the general public largely match the quality of life threats discussed in the interviews in the following section of the thesis. The public's main concerns are with the air and water quality impacts due to the increased diesel emissions

of the intermodal operation and the traffic impacts to local roads due to increased truck activity. The most unified request from the comments of the general public was for a full Environmental Impact Statement to be completed for the project opposed to just the Environmental Assessment (USACE, 2009).

General public comments showed a concern that the impact analysis on air and water quality in the EA relied too much on the analysis of consultants paid for by BNSF. Comments also showed repeated requests for the comment period to be extended to allow additional towns that would be impacted at the regional scale to have an opportunity to comment on how they would be impacted, opposed to just the towns that would be directly impacted. Several comments also commented on the drastic change their rural community would go through mainly in regards to traffic and noise (USACE, 2009).

For the Joliet case, because a formal public review process was not a part of the project, a central location of public opinion on the project could not be found. Joliet Plan Commission meetings from 2010 did show that major concerns of Joliet residents were the traffic impacts due to increased truck activity and the deterioration of local roads due to that same activity. As will be read in the Discussion Section, both public officials and railroad officials recognized that the general public is most concerned with the issue of truck impacts on traffic (Joliet, 2010).

4. DISCUSSION

This study will now review how railroad representatives and public officials worked to reduce public opposition, implement mitigation measures, promote economic development, and communicate across agencies for freight intermodal terminals

The information in this section was largely gathered by interviewing the people listed below given in the following format: First Name – Generic Title (names have been changed to protect identity):

Edgerton/Gardner Case

- Ethan-RR – Representative of the Railroad Company
- Ellen-PO – Public Official

Joliet Case

- Jon-RR – Representative of the railroad company involved
- Jake-PO – Public Official involved

4.1 Public Opposition

4.1.1 Use of Third Party to Disseminate Project Information

The dissemination of information through a third party that is perceived to be unbiased with less of a stake in the development of a project has been cited in the interviews and previous research as an effective method of overcoming or avoiding public opposition.

Trust among stakeholders is critical when it comes to the dissemination of information. Often times, stakeholders of a project will respond better to concerns when information comes from a source they deem to be credible. This helps to ensure that the development process is perceived to be open and fair, and it effectively works to reduce public opposition given the information regarding impacts of the project (Schively, 2007)

In the interviews, both the public official and the representative of the railroad for the Edgerton, KS case cited the same example to this effect. Residents of Johnson County, KS had expressed concerns

about how the intermodal terminal development would impact Hillsdale Lake which provides drinking water for over 30,000 people in and around the Southwest Johnson County area (HWQP, n.d.).

According to the two interviews, the advocacy group for the Hillsdale Watershed, the Hillsdale Water Quality Group (HWQ), publicly endorsed the intermodal project by citing studies that the project would not have significant impacts on the watershed. The public official and representative of the railroad believe this endorsement had an important role in persuading a majority of the general public that the project would not impact local water quality. An Environmental Assessment completed for approval of a USACE permit came to the same conclusion as well (Solie, 2009).

A third party can also provide a degree of separation between two leading entities that are handling most of the negotiations. In the Edgerton case, a representative of the railroad stated that South West Johnson County Economic Development Corporation provided credibility and assurance to the general public that the City of Gardner and the railroad were not conducting in a private manner through the county's studies and marketing campaigns for the project.

4.1.2 Mobilization of Project Supporters

Mobilization of supporters is often identified as an effective method in battling public opposition of a project. Government & Community Affairs Strategies (GCA) states that formal efforts should be made early in the project's development stages to identify and mobilize a broad base of supporters that ideally represent different groups of the public (Noto, 2010).

Jon-RR stated that it was typically the responsibility of the railroad to organize meetings where the stakeholders and the public officials could discuss issues. As far as mobilization of supporters, Jake-PO said that for the most part, supporters self-mobilized because of certain events that took place, but no formal action was taken by public officials to mobilize them before the project went public. Mobilization of supporters was not as critical in the Joliet case because public opposition was low and did not have significant impacts on the project.

Both Ellen-PO and Ethan-RR described mobilization of supporters by saying that they “came out” referring to coming to public meetings, but that a formal outreach was not implemented or necessary. These groups included representatives of the construction unions, real estate industry, and development industry. Both Ellen-PO and Ethan-RR said that the problem was that opposition groups spoke more and were more active than the groups in support of the project. As Ellen-PO stated when asked about supporters at meetings, “What would happen would be...people sometimes avoid conflict. They will be very supportive, but they don’t want to go out in public and say things.”

Compounding this problem for the Edgerton case, the opposition was very well organized at public meetings. This project had mobilized a core group of people who were united in their opposition for the project. The people who were part of this core opposition had different values when it comes to increasing development in their community.

To help avoid this problem of supporters being drowned out by opposition at public meetings, GCA recommends avoiding certain type of meeting formats. GCA states to, as much as possible, avoid soliciting public participation through mass meetings because the environment can quickly turn confrontational and make it difficult for presenters to explain the facts about projects. Also, like was stated by Ellen-PO, this meeting format has a tendency to quiet supporters. Pursuing public participation through door-to-door canvassing or with a series of smaller group formats can be more effective, to the extent that local laws do not require mass public meetings (Noto, 2010).

4.1.3 Using Consistent Methods of Delivery of Good Information

In efforts to reduce public opposition, an effective method is to have a knowledgeable person (or persons) deliver that information in a consistent way. The more often good information can be given at the right moment will help prevent public opposition from building. While correcting misinformation may be the most basic tool used to reduce public opposition through facts, the real challenge lies with how this is executed (Noto, 2010). Both the public official and the representative of the railroad

interviewed for the Edgerton case cited that having access to good information was critical when speaking with the general public and the media.

Ellen-PO stated that having good information readily available was likely the most effective tool the local mayors and their supporting staff had when confronting public opposition. Ellen-PO emphasized the information needed to be given in a non-emotional way and in order to have the most impact, the information should probably come from the lead municipality. Ellen-PO suggested that having the information come from the lead municipality would ensure the most credibility with the general public. This notion is based on the idea that the public has the most control over the elected officials at the town level so they have to be most accountable to the public. Ellen-PO said that if two cost benefit studies are done, one by the railroad, and one of the city, the general public would be more inclined to trust the results of the city's study.

Ellen-PO said that this ultimately helped to persuade a majority of the general public that the project, with the agreed upon mitigation measures, would not have significant impacts. The remaining challenge had more to do with a dedicated group of individuals that was vehemently against the project.

Ethan-RR stated the importance of being as transparent as possible in terms of information. In addition, it was critical for information to be given in a factual manner, staying away from emotions. Ethan-RR explained how facts do not change, and that gives the project sponsors an upper hand against those that oppose the project based on emotional claims. Ethan-RR stated that it is effective when less people are answering questions because it allows for greater control of the information. This is true for both the railroad and for the town. Ethan-RR commended Gardner, KS for making the project documents available through their website and for funneling questions from the public largely to one person, the assistant city manager.

4.1.4 When the Project's Values & the Public Opposition's Values Conflict

Both the public official and the representative from the railroad for the Edgerton case mentioned how the sticking issue when it comes to public opposition was and still is due to one group

that is vehemently opposed to a project. This idea is captured when Ellen-PO was talking about how organized the opposition was in the Edgerton case:

...these people were really, really organized and dedicated to having it defeated, and I don't think they cared at all if the taxes are high or whatever, they just were out here and they didn't want development and that's it.

A group that has drawn a line in the sand against a development may be doing so because they do not believe that mitigation of the impacts will do enough to protect quality of life and/or the project is at odds with what they value.

Ellen-PO had described these people as not wanting any development in this part of the county. Some members of this opposing group were made up of people that had purchased property to retire on and young families that wanted to ensure that there was no threat of increased air pollution, despite reports showing no significant impacts. The members of this group held different values that disregarded any financial reasons for developing the project. The GCA says this conflict of interest between the project and the opposition group is the most difficult to overcome. This is likely why Ethan-RR stressed the importance of persuading the people in the middle, so a majority of supporters could still be formed. GCA recommends that when there is a conflict of interest and an opposing group is not persuaded by the prospect of new jobs and lower taxes, but is instead fixated on the possibility of increased traffic and air pollution, a negotiations process may need to be started.

While beginning the negotiation process, concessions should be avoided, if possible, since they can be the most costly and least effective way to resolve a conflict. The goal of negotiations is to develop a project that is more responsive to the local community's needs. For example, if the local community is most concerned with how increased truck traffic will affect quality of life, very specific and visual plans should be presented to address this one issue. Making a plan that is more sensitive to the community's needs, even if some members of the community are not satisfied, can still be successful if it gives the public officials the assurance that the community's needs as a whole have been represented (Noto, 2010).

4.1.5 Soliciting Public Buy-In

The Edgerton case and the Joliet case provide great contrast on their approaches to soliciting public buy-in of their respective projects. Public outreach and education was a major part of the Edgerton project in large part because the project needed approval of the 404-permit from USACE due to the project being built on a wetland. Public participation and comment was a requirement of this permitting process. For the Joliet case, the project was not required to incorporate any formal public participation to gain approval of any permits.

Ethan-RR recommended letting the permit process outlined by USACE to handle public participation as it was designed to do so. The permitting process required a record of public comments to be maintained throughout the process (USACE, n.d.). Ethan-RR viewed the ample opportunities to get information to the public as a good thing because this provided a way to build public buy-in which is something the railroad strives to do with their projects. The railroad company wants to build where it is wanted. Ethan-RR stressed the importance of identifying different groups of people when soliciting public buy-in. These groups include the supporters, the people in the middle, and the people who will never be convinced that the project is a good thing. Ethan-RR said the goal is to target the ones in the middle and give them the information they need to make a decision.

Ellen-PO affirmed this desire of the public officials to solicit public buy-in. She acknowledged there were times within this development process when parts of the project could have been pushed through the city council (Gardner), but this was not an approach the public officials wanted to take. That approach would not have been conducive to long term success and thinking, as stated here by Ellen-PO:

I think circumstances and history of it, I think the council at one point could have just jammed it through, but they felt they needed that public buy-in because in the long run, if they pushed through one part of it, and you start developing the warehouses and the other businesses that you have to have to really make everything work and everything successful.

As stated before, the Joliet case did not have major issues with public opposition. According to the public official, Jake-PO states:

As far as I know, no major issues, but I will say this was not carried out as a project that had a big public review, participation process. And I think that was strategic. It was not something that [the project] required... The elected officials that do represent the residents of Will County and the City of Joliet were involved with the project and they were, but the public [specifically], there was no public participation component to approving this public as far as I know.

Unlike in the Edgerton case that required the approval of the USACE 404-permit because of the wetland development, the Joliet case did not have stipulated public participation requirements. For the Joliet case, this lack of public outreach may have resulted in an effective way of avoiding public opposition. However, public opposition and critique of the project started to build after the project was completed and began operation.

Jon-RR stated that the railroad company finds it most effective to build public buy-in through the normal local process. In the case of Joliet, a normal process was not in place to obtain the public's approval.

4.1.6 Impacts to Public Officials

Both cases gave insight to how public officials were impacted by the development of these intermodal projects. For the Edgerton case, Ethan-RR commented that these types of projects can be very difficult for public officials because they are the ones who will take a good deal of the pressure and consequences. This pressure is applied on the public officials from both the general public and business interests. Impacts can range from business relationships dissolving to council members getting voted out of office. For example, the annexation agreement between Gardner and BNSF was rescinded after council elections replaced a supporting council member with an opposing council member.

Another example includes the 2010 Joliet council elections which may have shown the general public's desire for the city to raise more money from the terminal, and specifically the railroad, by a councilman getting elected to office who ran on that very platform.

4.1.7 Lacking Formal Freight Knowledge among Public Officials

The literature identified that local governments are often lacking staff with formal training or experience with the freight transportation and logistics industries (NHI, n.d.). While the literature discussed this topic in the context of programming freight projects through the MPO's transportation planning process, the interviews suggest the issue of lacking freight and logistics industry knowledge played a role in project development of the terminals. For example, the mayor of Gardner had done research on intermodal projects when this project was announced, but did not have formal training or experience on such projects and used the railroad company as a common source for information.

The public officials for the Joliet case may have experienced a similar situation as was faced in Edgerton. According to the interview with Jake-PO, the public officials involved with the terminal project did not have a formal background with these types of projects or the freight industry, as stated:

No one (public officials) really had a background in this type of project or this industry, so a lot of it has been sort of learned along the way. It may not have even been a strategic thing where we're not going to make a big deal out of this. We don't know what exactly the consequences will be.

While not related as much to public opposition, the railroad representative from the Joliet case affirmed that public officials not having a good understanding about the needs and operations of the freight industry can be problematic. He was speaking specifically about community and economic development plans not taking into consideration freight business interests.

4.2 Mitigation Measures

4.2.1 Designating and Understanding Truck Routes

Understanding and designating truck routes was a mitigation topic that came up in all four interviews. The public officials and railroad representatives of both cases agreed about the importance of the issue, but the Edgerton case took a more proactive approach than the Joliet case.

The impact of truck traffic was cited as one of the number one concerns among public officials and residents of the Edgerton area. Plans have been made to separate the truck traffic, caused by the

terminal, from passenger traffic and to keep the traffic out of neighborhoods. Ellen-PO states the importance of this approach:

... the fact that they (public officials) realized there was going to be a direct route for the trucks (was a major positive., They (trucks) weren't going to come down the old infrastructure because they (public & private sponsors) were proposing to build a new interchange right off of Rt 35 which would move traffic quicker... There were a lot of issues that were brought up initially, like trucks would be driving though the middle of Gardner...

Planning for truck traffic was given a good deal of attention in the project plans because it was required in order to get the approval for the USACE 404-permit. When Ellen-PO was asked what issue was the public most concerned about and wanted mitigated, Ellen-PO replied about traffic, "...I think traffic is the issue. I mean, if you boil it all down, traffic and a perception that smoke will be billowing out."

Based on the interviews from the public official and the railroad representative for the Joliet case, the planning of truck traffic due to the terminal was largely done after the terminal was built and put into operation. The next statement is how Jake-PO described the how truck traffic was planned for:

Once the intermodal developments came to Will County, then there did start to be some discussion about the types of jobs they were bringing and who was responsible for local road maintenance, who was going to look at the number of trucks and the congestion that it was creating.... So after the fact, let's characterize it that way...

Jon-RR affirmed this statement by saying:

I think everyone assumed it (traffic impacts) was dealt with ahead of time. I think we all had this perception that it was [laid out as part of] the master development and there was a plan for the traffic. The issue is that the traffic that accesses our facility particularly has to go through 3 different political jurisdictions, 4 if you count the state...

A truck route has now been designated, but Jon-RR points out that truckers see it as a 17-mile detour that circles the intermodal facility. Because this is not seen as the most efficient route by truckers, problems have been experienced with illegal access to the facility to cut down on that 17-mile detour. This detour may be decreased when a school is relocated, but for the time being truckers often use an illegal entrance route, and because they are independently owned operators there is not much the facility can do.

4.2.2 Use of MPO Traffic Model to Improve Quality and Acceptance of Traffic Impact Studies

The two cases also differed in their approach when considering how each of the terminals would impact traffic patterns. Similar to the approaches taken for the designation of truck routes, traffic impact analysis was a major requirement for approval of the USACE 404-permit for the Edgerton case, while the Joliet case was not subject to that rigorous of analysis.

When modeling the traffic impacts of the terminal project in Edgerton, the organization doing the study was fortunate because Olathe, KS, in Johnson County, had recently completed a modeling exercise which used a traffic model of the MPO. According to the interview with Jake-PO, being able to use MPO-level data to conduct the traffic impact analysis gave the project more credibility among several different public agencies and municipalities in respect to how traffic would be impacted. The credibility of the traffic impact analysis would not have been as high if MPO data was not available for the study. According to the interview with the representative from the railroad for the Joliet case, MPO data was not believed to be used for any traffic studies.

As previously discussed, the Joliet case experienced unexpected traffic problems after the terminal was completed and went into operation. The problems with the unexpected traffic impacts on roads connecting to the terminal may have been better mitigated with greater communication among the railroad, developer, and local and regional municipal governments. When asked if there would be a benefit if the local municipality had a liaison that specifically handled freight issues or freight projects, Jon-RR responded:

I think it may have caught the disconnect that happened on the traffic planning issue with this project. I think if you had someone who knew that they had to work with the road department and the permit system that you had in place. This should have been thought out more even if we developed a great facility we are kind of an island. I think we developed it like an island, we thought about the inbound gate and outbound gate, but not about the Arsenal Road access or Rt 53 access.

According to the interview, unmet responsibility is placed in part on the local municipalities and the developer of the terminal to be better prepared for traffic and other impacts since the local

governments are planning and becoming an intermodal/warehouse hub of North America. The representative of the railroad noted a lack of unified vision among the various localities in addressing issues that do not respect jurisdictional boundaries.

The public official for the Joliet case affirmed the sentiments by Jon-RR that mitigation measures, not just limited to traffic, were not planned in advance for the terminal. When Jake-PO was asked if there were plans for mitigation measures that required infrastructure improvements, he responded:

I think that they were negotiated as they came up. I know in the time that I was at the [Will County] Center for Economic Development, there was heavy negotiations underway for access to the Joliet intermodal terminal, and so they had to agree to a route from the interstates that was several miles longer than they thought it could or should be, so that was one mitigation measure that I know came into play after it had already opened or possibly just prior to when it actually opened in August 2010...

4.2.3 Road Funding & Unresolved Revenue Sources

The funding of needed infrastructure projects, such as road improvements or new interchanges due to impacts from terminal projects, does not appear to have a typical process. It was described as an “unresolved issue” by Ellen-PO when talking about an interchange that the state agreed to pay for and was necessary for the intermodal facility operations. Ellen-PO stated:

Well, the funding of roads is always an issue. The state through looking at their return on the investment determined that from a public stand point it made sense to make that investment in the new interchange, and from a political it also made sense because of the growing traffic in the Johnson county area.

In this case, Kansas Department of Transportation was convinced that this investment was worth the cost due to high returns, both financially and politically. For the interchange project, the state worked with the railroad to access detailed information about how trucks would use the terminal regarding where the trucks were coming from and going to. The railroad had to gather this information to get approval for the 404-permit from USACE. The railroad surveyed trucks to model where individual trailers and containers were traveling to and from.

Committing funding to the maintenance and construction of infrastructure projects can be challenging for a municipality. When talking about the funding that Johnson County, KS was able to commit to infrastructure projects that supported the terminal, Ellen-PO stated, “Maybe around the U.S. [counties] wouldn’t have that capability to put that kind of money into infrastructure.” Responding to the pressures of funding and financing to support infrastructure improvements, Jake-PO discussed that local governments can capitalize on the economic activity of intermodal terminals:

We're looking at various sources of revenue, container fees, or some kind of revenue that would be generated from the economic activity of the intermodal so it would be on the containers. There are also user fees for the roads. We're looking at property tax assessments. We're looking at a variety of revenue sources.

4.2.4 Container Management

Interviews from both cases discussed how the general public and public officials were concerned with where all the containers would go. The fear was that containers would pile up in lots around town. Will County, IL passed a zoning ordinance aimed at preventing this buildup of containers, although Jake-PO discussed how it probably was not necessary to do so:

I think that (container ordinance) was spearheaded by the Center for Economic Development [which] was prior to my joining the CED, and in my few years that I was there, it wasn't often used or referred to. I think from what I heard, there was a concern from the community that there was going to be a lot of container yards, miles high, and enlarged tracts of land were going to be used for storage. There was a big concern about that, but I don't think it ended up being as big of a problem as they thought it was going to be. In part because there were companies that saw the demand for empty containers from the agricultural industry and so they basically started using all of those empty containers for grain to ship back.

4.2.5 Effective Mitigation Measures & Challenges

Both cases made use of several different types of mitigation measures to alleviate quality of life concerns due to local impacts. Both terminal projects used electric cranes and a combination of sound walls and berms. Use of electric cranes to transfer containers from trains to trucks was an important mitigation measure because it decreased the amount of air pollution produced onsite. This is why public officials and the general public like the use of electric cranes, but the railroad companies also like using them because they are more fuel efficient.

Jon-RR discusses another important mitigation measure:

The other thing they did around the perimeter of the facility.. if you look at the north and western borders of the facility, they put in these huge berms. So really when you're driving along Patterson or Laraway, that border our facility, you don't really see into the yard because it's kind of elevated. I think that was a good move, and they populated the berm with native plants and prairie grasses...

Both the public official and representative of the railroad for the Edgerton case also describe that an earth berm/sound wall combination was an effective mitigation measure.

The railroad representatives for both cases cited the inclusion of a conservation prairie on each terminal site as an important mitigation measure. Jon-RR explains, "I think that the prairie preserve that they worked on establishing did a lot to deflect any negative or environmental criticism because there was now a conservation component to it."

For the Edgerton case, an already damaged stream was relocated and rehabilitated accompanied with holding pools. The stream rehabilitation was part of an overall conservation corridor that was constructed on land purchased for intermodal operations.

Jon-RR explained that another highly successful mitigation measure was the developer's buyout of nearby homes in and around Joliet. He explains, "Well, I think the (home) buyouts are always helpful which is generally controversial when you're buying people's homes, but I think they (the developer) were good partners with the community when they did that."

4.2.6 The Need to Consider Mitigation Measures in the Early Stages of the Development Process

Funding of mitigation measures, namely infrastructure projects to calm traffic, can be challenging when it comes to which entity is responsible for funding the project or who is responsible to what degree. This can be decided through calculations and assumptions about to which degree does each entity benefit from a mitigation measure. This becomes an issue when mitigation has not been thoroughly considered in the early development stages of a project. Such was the situation with the

Joliet case. When asked if there has been discussion among the local governments, the developer, and the railroad about how much each entity benefits from mitigation projects, Jon-RR responded:

We haven't really debated that, that comes up a lot at grade separations though. The fact that we paid for Hillsdale Road is amazing considering we don't fund many grade separations because grade separations make trucks and cars go faster but don't make a train go faster. There are only incremental benefits we get with a grade separation...

Public officials, the railroad, and the developer from the Joliet case are currently seeking out how each entity is impacted by the terminal. This has become more of an issue as raising new revenue has been discussed based on the terminal. A study commissioned by Will County is currently underway.

4.3 Economic Development

4.3.1 Important Factors Railroads Consider when Deciding where to Site a Terminal

When a railroad is deciding on where to site an intermodal terminal, the most important factor considered is how a location fits into their overall freight network and best serves their business interests. Ethan-RR collectively called the critical factors to be the “river of trade” which refers to a piece of property that is:

- On or near a main line
- Near the customer base
- Near the interstate
- A long enough piece of property available with no grade crossings of any kind
- Along several miles of rail frontage

Factors such as choosing a locality that is pro-business, removes as many barriers to development as possible, has support from public officials and general public, and has a unified plan with surrounding towns come unequivocally in second when compared to the “river of trade” factors. In terms of terminal location as it relates to a market, if it is sited a certain amount of miles from the metro area, it can become difficult to get truckers to make the trip. Jon-RR reaffirms this when responding to a

question asking if pro-business factors and public support weigh into the determination of where to site a facility when compared to the “river of trade factors:”

No, our investment was basically driven based on the fact that we saw a huge need for a ramp of this size, but really you have to keep it within a certain radius of Cook County and Chicago. The problem we learned with the Rochelle facility out in Rochelle (IL) is that it's too far out. We built a \$200 million facility, but its only at 30% capacity because the truckers don't want to pay the toll to go all the way out to pick up a box vs. when it's 30 miles away, 1/3 the distance...

Towns being pro-business and having a unified vision with neighboring towns does play a role to some degree in a railroad's decision to site a terminal. Jon-RR was asked if and how a town and area having a plan factors into a siting decision:

It doesn't really factor into our plan. I think it helps the overall final decision [because] you want to go where you're wanted, but at the end of the day, the business dictates our own needs and works to figure out where the best [location is]. I think to some extent CenterPoint marketed this area to UP. They said, 'Hey this is a good opportunity for you guys. BNSF is down here and they're doing really well. You guys would do well.' I think that kind of conversation happened and that's part of the business case for it. Overall, when we expand a facility to locate on, you kind of go to agencies that want you. You want it to be right for the business model, the ROI, and NPV and all those things that go into making a decision of a major capital event, but it's not because some community said they did a great job selling it. It goes where it's needed.

The public official for the Joliet case explains what he thinks UP appreciated about the town and county in which the terminal is sited:

I think they appreciated the fact that Will County embraced their proposal, that they welcomed them to the community, and they were willing to find a way to make the project work. UP did not want to absorb all of the costs for the infrastructure improvements, and they had a partner in doing that with CenterPoint and with the local towns. UP wants to be in places where the community embraces their operations and is willing to help them make the project work.

The public official also speculatively stated that he thought it was possible that UP would prefer a situation like they experienced in Joliet and Will County as far as no required public participation process. This could be seen as having removed one barrier to development.

4.3.2 Effective Incentives Used to Encourage Development of the Terminal

The railroad representatives for both cases were clear that they site facilities first and foremost on locations that best serve the market their business model needs to serve. However, municipalities and regional governments can still play a strong economic development role with intermodal projects. As stated by Ellen-PO, financial incentives can be strategically used to encourage faster development of an intermodal project:

The [use of] incentive came in getting them [BNSF] started because they had announced maybe 2.5 years ago that when the economy kind of tanked, that they were on hold and they didn't know if they were going to start this project in a year, 2, 3, and that's why we supported them in the stimulus. Thought we had a good argument, but also support of the state and the work with the state to get that \$25 million and the county to agree on the roads because it makes a difference to us whether it's this year or 5 years from now.

Ellen-PO explained that it is not just economic downturns that could prompt a holding pattern, but that there are a number of reasons, and that no matter what the reason, it is typically in local governments' best interests if the property is developed sooner rather than later.

Some incentives include the financing of infrastructure. Ellen-PO explains that Edgerton and the railroad reached an agreement on how to finance a sewer system that would be necessary after the build-out of the terminal and adjoining properties:

The City of Edgerton is putting in a brand new sewer plan, and for a town of 1,700 that's quite a project. They're counting on future development. I think there was a desire to move this project along, and I think the development agreement where they give them that 75% and they pay them back 25% in order to get more infrastructure. I think there were things like that that are definitely incentives.

For the Joliet case, Jake-PO pointed to the Intermodal Facilities Promotions Act as an important incentive in getting the terminal built. The Act was a financing device that allowed for CenterPoint to get reimbursed for the upfront infrastructure costs. Jake-PO explains:

It was revenue that would be generated from employment. It was on the income tax for new employment and again I don't really know how much revenue that's actually generated at this point. I do know that the fund, the revenue fund the revenue is going into a separate fund and the only entity for eligible for those funds is CenterPoint Properties. So [it is] for eligible developers, but as far as I can tell only CenterPoint qualifies as an eligible developer.

Local tax abatement and local and state grants were secured for the intermodal project in Edgerton, and the justifications for giving of public money to a major company like BNSF was sometimes difficult for public officials to explain to the general public. Ellen-PO explained:

When it's a tough economy and people see their taxes going up, or costs going up or whatever, and they see the company the size of BNSF come in and get something, and they go down past the local gas station and he's getting ready to go out of business... It's difficult to talk to people and tell them you have a multi-billion dollar corporation that if you look at the cost to build the intermodal, they said about \$250 million, that's a lot of money, but for a business the size of BNSF it's not that percentage wise a big part. People look at that and they say, why aren't they just coming in and doing it.

Knowing this challenge, Ellen-PO would explain the long term benefits to the public and be very explicit when justifying the use of public funds to help develop the project when presenting information to the general public. Here is an example of how Ellen-PO would approach the situation:

So basically, whenever I presented, I presented the long term benefits, the benefits of development, the ratio of development residentially vs. commercial and in the state of Kansas. The other thing I tell them is, if you build a building that's a \$200,000 commercial building, and if you build a \$200,000 house, the assessment rate on that house is 12% The assessment on the commercial property is 25% so, what I talk is let's look at it from jobs, but also the positive impact on your taxes.

While no suggestion to whether this was a problem or not, Jake-PO referred to the process of attracting and incentivizing the Joliet terminal project as fragmented, "The picture I am painting is that the responsibility for attracting and incentivizing this project was somewhat fragmented, and was not specifically the responsibility of one agency."

4.3.3 Considering the Freight Industry's Market & Business Interests when Developing Community & Economic Development Plans Dependent on Freight Growth

In the *Literature Review* section of this thesis, community/economic development plans for sub-regions is discussed. Development of "cargo-oriented development" has become popular over the last 5 to 10 years and municipalities have been taking notice. The Green TIME Zone plan for the "South Suburbs" of Chicago was noted in the literature review. This economic development idea was discussed

with Jon-RR. When asked about the success and potential of these types of community plans, he explained:

I think they've [Chicago South Suburbs] done a good job of reaching out to us and trying to get us to do more on that. The challenge with that is you really have to work with the business interests to say where does it make sense for you to go. I think a lot of times people build it thinking they will come, but if it doesn't fit our business model we won't go there. If it doesn't fit our operational model, then we are not going to go there. We actually have a very large intermodal facility there in Dolton [IL]. It does all of our Mexico traffic. I don't know how that plan fit into their plan. I don't think they know what goes in and out of that facility.

4.3.4 Pursuing Economic Development Due to Terminal Activity

In addition to economic development measures aimed at attracting or promoting the initial terminal development, economic development measures can be used to promote development that is spurred by terminal operations. According to Ellen-PO, Olathe, KS has taken a proactive role in trying to capture and promote development that is spurred by the terminal:

The city that has done the best job [of capturing economic benefits], outside of Edgerton, is the city that's adjacent to the north, and that's Olathe, that's the southern part of their city that abuts this area. When the intermodal was announced, they were actually proactive in talking with the land owners in the southern part of their community and talking about the intermodal and the potential benefits. They went out and did some planning. They changed some zoning because they had residential areas that were going to be developed so they worked with the landowners/developers to change that to industrial. They did a good job.

As Olathe, Edgerton, and Gardner have been preparing zoning plans and talking with landowners to promote growth due to the terminal, Ellen-PO explained there are towns across this part of the region that are unsure how they will be impacted by the terminal development, but would like to know what to do in order to promote growth. Ellen-PO explains:

Then there's cities that are pretty close, small cities and they don't know exactly how they are going to benefit. They are calling me and saying, 'What do you think? We're 20 miles away and not on a really good road system. Do you think we will be impacted?' There's a town 20 miles south on 35 that I think will benefit, and they do too. I think they are almost too confident.

Towns can capture economic benefits from terminal projects by providing services for truckers.

Jon-RR states that the lack of trucker services available in Joliet was a problem for the truckers:

The last thing on the planning side I think was overlooked... the truckers will tell you there's no services. So you pull off and take your truck down to Joliet to our facility and there's no gas stations for the truckers to refuel, no rest stops, nothing.

4.3.5 Promoting Local Employment

Construction projects on the scale of an intermodal terminal can require some amount of guaranteed local hiring for labor. For the Edgerton case, construction of the terminal was encouraged to go to a certain percentage of local workers, but this may not have been required. A target percentage was set for the amount of local workers they wanted for terminal construction, but maybe not enforced. Local employment was only included in negotiations as part of the terminal construction phase, but local employment was not targeted after construction of the terminal for operations. Ellen-PO, explains the local hiring situation like this:

When they [BNSF] signed the agreement they started working (on constructing the terminal). I think they made a commitment for a fairly large percentage of those people to be employed that would be from the region. That was a positive, the negative side of it was, they were bringing in the scrapers and stuff, so the people that were getting the jobs were teamsters, operators, laborers, and so some of the local people thought 'well maybe I should be riding that scraper.' Well in fact you have to be certified to do it.

Ellen-PO's comment reflects the literature previously cited in this thesis on local hiring for jobs within the freight transportation industry. Despite requiring a lower educational attainment, jobs can often require special certificates that a local labor market may not possess. While the market can begin to obtain such certificates, there may be a lag that results in initial work going to certified workers being brought in from other areas. This can be mitigated if training programs are set up based on the prospects of these types of jobs coming to an area.

For the Joliet case, nothing was done to promote or require local employment for the construction of the terminal. When asked if the county or the city had required any local employment guarantee, Jake-PO stated, "No, that's a shame...there was nothing stipulated." Encouraging local

colleges and job training centers to include a program specifically for the freight transportation, warehousing and logistics industries has been an effective way in preparing a local workforce for the specialized jobs these projects bring to an area. These programs developed in Joliet area colleges and training programs evolving organically, as explained by Jake-PO:

I know that community colleges have started to offer some more core classes in training for truck drivers and people in logistics and transportation professions, but that's happened because of the inland port development, but it's slowly involving. It's happening, and I think it's fairly coordinated.

4.4 Communication

4.4.1 Establishment of a Project-Based Freight Advisory Council & a Transportation Management Association

Freight advisory councils (FACs) have been identified as an effective tool to increase coordination and project results when local and regional governments plan for freight projects or growth (Cambridge & Reebie, 2001; Williamson et al, 2007). Freight advisory councils were not created for either of the two cases reviewed, but Jake-PO responded positively when asked if there was a need for a freight advisory council to help facilitate communication across local municipal governments and private stakeholders of the terminal project, "Yes there was, but it never happened." A FAC had been proposed and was in the early stages of development, but it ultimately was not in the work plan of the CED. Communication among Will County, the municipalities, and the freight stakeholders may have lacked guidance. Jake-PO described the communication in this way:

I wish that I could lay this out. It doesn't happen like that always, but usually it is more heavily skewed to some kind of advanced process, but this just wasn't here. I hope that I am making it clear that there was a lot of communication, but not this time. It mostly involved [one person], but he/she worked closely with the chairman of the Will County Board. He/she worked closely with the city manager from the City of Joliet. He/she worked closely with the county executive who is very involved and has been with these projects. The business leaders, the businesses that are actually coming to Will County because of the intermodal access. So he's/she's kind of at the center of it and the CED is at the center of it.

Increased communication among the municipalities may have helped Joliet in knowing some of the impacts that they could expect from the terminal. A similar freight intermodal terminal was built in

the City of Elwood, Joliet's neighbor to the south, about 10 years ago. When asked if Joliet and Elwood had been communicating, Jake-PO responded:

I don't think that Elwood and Joliet worked very closely on any of these projects. Elwood, they house the BNSF terminal and that project has been around for 10 years now. They learned a lot but I don't think that, and I could be wrong, but I know I was not involved with any meetings between the two [cities]. I don't think there is any real animosity, but I don't think that they work all that well together. I think that the village of Elwood has worked hard to protect their interests over the years because they did not know what they were getting themselves into when they became a terminal mecca, and as a very small town... I think they felt like they weren't prepared, but over time they found ways to address the infrastructure needs, the revenue needs. But they are kind of closed about how they do business. They did not work closely with the Will County CED, and I don't think they shared a lot of information with Joliet. That said, I think that there was enough known about what worked and what didn't work in Elwood that the City of Joliet was able to take advantage of some of the experience.

Lacking communication between the two municipalities could have been due, in part, to competition. The county has issued a study to better understand how different entities are being impacted by the intermodal developments to "tease out" these benefits and the recipients. This will assist in the distributions of new revenue raised from the intermodal developments to the municipalities and possibly help to lessen competition.

The Southwest Will County area is now in the process of establishing a transportation management association (TMA). The purpose of the TMA would be to advocate for the implementation of transportation demand management (TDM) programs in order to improve traffic flows for business interests and residents as this area has experienced tremendous growth and is expected to continue a similar trend (AECOM, Tammen Group, & Ruettiger, 2010). Jon-RR encouraged the idea of this area having a TMA as he explains, "They're working on forming a transportation management association. I don't know why that wasn't developed before the project. They formed that as a response to all the issues they had been having."

Jon-RR's comment on a TMA for the Joliet area reflects earlier findings that impacts of the Joliet terminal were in part addressed after the terminal was completed.

5. RECOMMENDATIONS & RESEARCH CONTRIBUTIONS

5.1 Explanation of Development of Recommendations

The Recommendations Section is the culmination of the key information and conclusions from the following previous sections of the thesis:

- Introduction
- Research Methods
- Literature Review
- Discussion Topics

The Introduction Section identified three critical areas making the research of this thesis relevant and necessary. Those areas include the challenges of integrating freight projects into the transportation planning process, the growth of freight operations, and the public impacts of freight projects and operations. These areas were further explored in the Literature Review Section and directly influenced the development of this thesis' research methods used and the resulting discussion and recommendations.

Information on established methods of reducing public opposition, implementing mitigation measures to protect quality of life, and promoting economic development were used from the Literature Review Section to develop the Research Methods Section and develop the questions used for the interviews. The Discussion Topics Section resulted from the interviews which added insight and context to the established methods identified in the Literature Review Section of reducing public opposition, implementing mitigation measures to protect quality of life, and promoting economic development for the development of freight intermodal projects. Applying these methods to freight projects and discussing their implementation with both public and private freight officials provided insight as to what methods would be effective, what challenges may be encountered, and what solutions could be

used to overcome challenges and ultimately created the recommendations this thesis makes. See Figure 5 for a summary of this development.

The recommendations are given in a bullet-ed format to emphasize the context surrounding the implementation and use of the recommendations for public opposition, implementing mitigation measures to protect quality of life, and promoting economic development for freight intermodal terminals. This context represents new information gained from the interviews and from overall review of the literature of applying these methods to freight projects. Included with each recommendation is information on its:

- **Purpose** - Why the recommendation is important
- **Problem** – Critical problems that have been identified with implementing the recommendation
- **Impacts** – The impacts of not being able to implement the recommendation
- **Resolutions** – What to do to overcome problems to implementation

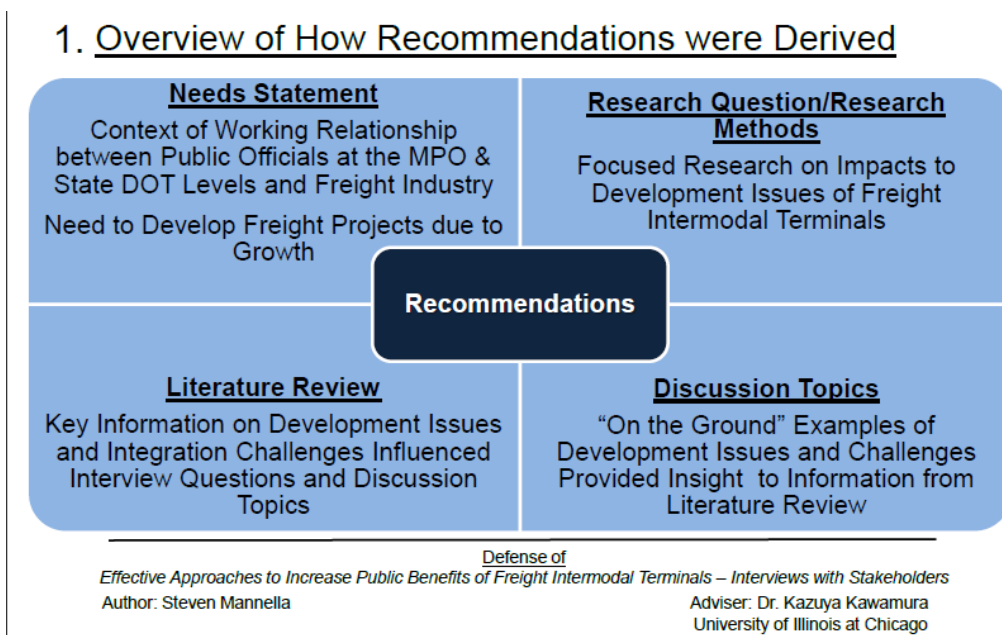


Figure 5 Development of Recommendations

5.2 Recommendations for Reducing Public Opposition

5.2.1 Mobilize and Strengthen Project Supporters

- Purpose:
 - Groups that will likely be in support of a project should be contacted by project officials in efforts to organize them either before the project goes public or in the very early stages of development.
- Problem:
 - Groups in support of a project may come to meetings on their own, but without formal mobilization from project sponsors may become overpowered by opposition groups.
- Impacts:
 - Supporting groups become less likely to come to meetings and voice support which can marginalize their impact on the project.
- Resolutions:
 - Avoid mass public participation meetings as much as possible because they can quickly become confrontational and create a difficult environment to disseminate information. Use smaller format meetings and alternative participation processes, such as door to door campaigns and “living room” meetings.

5.2.2 Have Third Party Disseminate Critical Information

- Purpose:
 - Can give credibility to information that the public wants to know in order to support a project. An example was when the Hillsdale Water Quality group (HWQ) publicly endorsed the intermodal project in Edgerton by citing studies that the project would not have significant impacts on the watershed.
 - A third party can also provide a degree of separation between the two leading entities that are involved in the main negotiations. An example given was Johnson County acting as a degree of separation between the railroad company and Edgerton.

5.2.3 Use Consistent Methods to Deliver Good Information

- Purpose:
 - Factual information will ultimately convince more people than information that is based on emotional claims.
 - Designating a select amount of people to respond to the public's questions allows for the message to be controlled and ultimately more trusted and convincing.
- Problem:
 - Choosing the correct entity to be the primary place where the public asks questions and receives information.
- Impacts:
 - If the public does not trust the information coming from a particular source, the information will be less effective.
- Resolutions:
 - Typically, having the municipality be in charge of responding to public concerns will be most effective since the public has the most direct power over locally elected officials.

5.2.4 Initiate a Negotiation Process with Opposition Groups that Have Conflicting Values to the Project's Values

- Purpose:
 - Groups that have values that are in contrast to the impacts of a project are unlikely to be persuaded to support the project.
- Problem:
 - Projects that have groups in vehement opposition can be challenged by public officials who are aware of their residents' opposition and may create a difficult environment to develop the project.
- Impacts:
 - The project may be delayed or cancelled altogether for a specific location.

- Resolutions:
 - Project sponsors can enter into a negotiations process with an opposition group with the goal to develop a project that is more responsive to the community's needs and create plans that are explicit in addressing those needs.
 - Creating a project that is more sensitive to a community's needs may still not satisfy all members, but can still be successful if it gives the public officials the assurance that the community's needs as a whole have been represented.

5.2.5 Solicit Public Buy-In to Develop a Project Responsive to the Needs of the Community

- Purpose:
 - A project can be more successful and have less unexpected, negative local impacts if the public supports the project.
- Problem:
 - Public participation for a project is required under specific circumstances and jurisdictional laws, but also may not be required in several instances.
- Impacts:
 - A project may be created that is not responsive to community needs and negatively impacts local communities in unanticipated ways.
 - If future public decisions need to be made regarding the project, support from public officials may decrease and the project's operations may suffer.
- Resolutions:
 - Local and regional governments should have an established public participation process for publicly and/or privately funded projects that will have significant local impacts.

5.3 Recommendations for Effective Mitigation Measures

5.3.1 Designate and Understand Truck Routes & Movements

- Purpose:
 - Keep truck traffic generated by intermodal terminal activity out of certain neighborhoods, on specific roads, and separated from passenger vehicles.
- Problem:
 - Public officials may not know how truckers will access the facility until after the terminal is completed and goes into operation, while owners of the terminal are primarily concerned with how trucks navigate inside their terminal.
- Impacts:
 - Designating truck routes after the terminal goes into operation may be difficult and disobeyed by truckers.
 - Certain neighborhoods or areas of the city may experience a significant increase in unwanted truck traffic.
- Resolutions:
 - Owners of the terminal can share gathered information with public officials on where trucks will be coming from and going to in order to assist in traffic planning on roads used to access the terminal.
 - Public officials should be aggressive in designating truck routes prior to the opening of the terminal to ensure routes are created that truckers will be likely to use and surrounding communities agree to.

5.3.2 Coordinate with MPO (use MPO model)

- Purpose:
 - Use the most currently available MPO data for modeling traffic impacts to build credibility among other local governments regarding traffic impacts of terminal.

- Problem:
 - Recent or current MPO-level data may not always be available for projects to use
- Impacts:
 - Traffic impact studies may not be as accurate or comprehensive. Neighboring towns may not trust results of the study.
- Resolutions:
 - Reach out to MPO early in the project development process to work on obtaining the necessary data.

5.3.3 Create New Streams of Revenue to Fund Infrastructure that Supports the Terminal

- Purpose:
 - Freight projects place additional stress on supporting road infrastructure due to increased truck traffic, and towns need to find a politically acceptable way to finance the improvement of infrastructure.
- Problem:
 - Collection and dissemination of new revenue can be based on the degree to which certain entities receive benefits from the terminal. This can be a difficult equation to calculate and be agreed upon and requires an extensive economic impact analysis.
- Impacts:
 - Plans for who funds the maintenance and improvement of supporting infrastructure goes unresolved and causes the deterioration of infrastructure.
 - The general public may become upset that their town has to pay the bill for infrastructure costs that they perceive to be the responsibility of the owner of the terminal project.

- Resolutions:
 - An economic impact analysis should be commissioned as early in the project development process as possible so the topic of how to fund infrastructure does not go unresolved.

5.3.4 Consider Implementation of the Following Mitigation Measures to Protect Quality of Life: Electric Cranes, Conservation Prairie, Earth Berms & Sound Walls, and Home Buyouts

- Purpose:
 - Implement measures that have the greatest ability to alleviate the public's concerns over threats to quality of life caused by the terminal.
 - The above measures successfully alleviate concerns over environmental damage, unwanted views and noise, and negative impacts to property values for the closest neighbors.

5.4 Recommendations to Promote Economic Development

5.4.1 Incentivize Terminal Development by Accelerating Development Process & Knowing how the Railroad Chooses the Locations of its Capital Investments

- Purpose:
 - Intermodal terminals can bring economic activity and growth to a town or area if pursued by public officials.
- Problem:
 - While towns can provide incentives to be chosen as the location for a new terminal, their location may be limited due to market factors that dictate where terminals need to be located. Rail investment projects are driven by how they serve the market and fit into the "River of Trade."

- Impacts:
 - Towns can create community/economic development plans that capture the benefits of expanded freight operations and growth, but if their location does not serve the necessary market, freight growth may not occur in their town.
- Resolutions:
 - Towns can play a role by affecting the amount of time it takes for a project to be completed. Aiding the development process to accelerate it may be in the best interest of the town since economic benefits will occur sooner rather than later and avoid project holds due to impacts of the constantly changing national and global economies.

5.4.2 Capture Economic Growth from Intermodal Activity by Being Proactive in talking to Landowners, Preparing Land, and Changing Zoning

- Purpose:
 - Towns are able to capture the economic benefits, such as increased tax revenue and new employment opportunities, through policies that promote freight growth.
- Problem:
 - Capturing economic benefits from intermodal activity can be missed if public officials do not take the necessary measures to capture the benefits.
- Impacts:
 - Opportunities to ensure local hiring, prepare local workforce for specialized jobs, or prepare land that is suitable for warehouse, light manufacturing development, and trucker services can become missed opportunities or not maximized.
- Resolutions:
 - Towns should talk with landowners that may own attractive pieces of land for freight development and change zoning accordingly.
 - Towns should plan for the increased presence of trucks and provide the services they require.

- Programs should support the necessary job skills-training and certification programs at community colleges and other job training programs to prepare the local workforce.

5.4.3 Increase Freight Industry Knowledge among Public Officials to Promote Programs and Policy that Captures the Benefits of Freight Development

- Purpose:
 - With formal knowledge on the freight transportation and logistics industries and an understanding of their business markets, public officials can create better community/economic development plans that promote the growth of freight operations in their communities and capture the economic benefits.
 - Public officials can create plans and make policy decisions that better protect their public from negative impacts associated with freight operations and thereby increasing public support for projects.
- Problem:
 - Municipalities may lack the resources to employ staff with the necessary freight experience and not be able to designate personnel specifically to freight project issues.
- Impacts:
 - Public officials may not know what consequences to expect from freight projects which can lead to expensive mitigation and an upset public after the project is completed.
 - Economic benefits from the project may not be captured to their full potential, such as not stipulating local labor agreements or promoting training programs for the specialized jobs that will be created.
- Resolutions:
 - The Federal Highway Administration and the National Highway Institute provide online training courses for public officials and supporting staffs on freight transportation topics that focus on teaching the industry to those that are not a part of it.

- When a major freight project is proposed for a town, that town can hire personnel with freight transportation experience on a project basis.

5.5 Recommendations to Increase Communication among Local Public Officials & Private Stakeholders of the Freight Industry

5.5.1 Establish Project-Based Freight Advisory Councils & Transportation Management Associations

- Purpose:
 - Increased communication can help identify issues in the early stages of the development process and avoid unexpected consequences.
 - Towns can capture additional economic benefits by planning comprehensively for the growth of freight.
- Problem:
 - Competition among municipalities can dissuade increasing communication. This competition can be born from changes in the amount of local tax revenue available.
- Impacts:
 - Funding of needed infrastructure improvements becomes disputed.
 - Deciding on how and where to route trucks can result in routes that are not acceptable to truckers due to their indirectness.
 - Towns may not share information from past experiences with other towns that could benefit from the information.
- Resolutions:
 - Establishment of a transportation management authority can increase the communication among local and regional public officials and private sector stakeholders to advocate for the implementation of transportation demand management programs to improve traffic flows for public and private interests in an area, ideally before the project is completed and goes into operation.

- Establishment of an intermodal committee can help guide the communication and discussion of issues among local and regional municipalities and private stakeholders to help avoid the unexpected issues that can occur after a project is completed and goes into operation.

5.6 Research Contributions

The above recommendations of this thesis give insight to how members of the freight transportation industry and public officials address community issues impacted by the development of freight intermodal terminals. Analysis of the interviews conducted for this thesis and previous research on related topics allow for the impacts of the relationship between members of the freight transportation industry and public officials to be better understood in how they impact the project development issues of public opposition, mitigation, and economic development.

5.6.1 Future Research

By providing a better understanding of where the gaps in planning for the development issues are and why they may exist for freight intermodal projects, this thesis encourages further research on how the development of freight projects can have impacts that are optimized to benefit the host and neighboring communities. The following subtopics represent critical intersections between members of the freight industry and public officials where gaps exist and impact the previously discussed development issues for freight intermodal projects.

Regulation across all levels of government significantly impacts the way in which a freight intermodal terminal is developed regarding the level of review required. Comparison of the Joliet case and the Edgerton case highlights this issue because the Edgerton case was subject to permit approval under jurisdiction of the Army Corps of Engineers (because of wetland development) while the Joliet case was not subject to the same level of public review. Impacts of Federal, state, and local regulations should be explored for their impacts on project delay and public participation.

Lack of formal freight training and understanding of public officials about how the freight industry operates in terms of the demands of its business model impacts the relevance and success of subarea plans that attempt to capture economic benefits from freight projects. The relationship between communities that are experiencing greater benefits from freight projects and operations and the knowledge their public officials have on the freight industry should be explored. The issue of a lack of freight expertise of public officials can also result in unforeseen (not planned for) consequences due to the growth of freight in a community. Further research is needed to determine if unforeseen consequences of freight projects are related to the lack of expertise of public officials, and if public officials are taking advantage of freight training courses offered by organizations like the FHWA and NHI.

The impacts of contracted developers by the railroad companies on the development process of freight intermodal terminals should be examined. The cases reviewed in this thesis suggest that the use of a third party developer in the Joliet case to do the land entitlement process with the local towns and residents leveraged the strength of a developer and avoided the weakness of a railroad company due to the extensive capabilities and experience some developers have in community relations. Gaining a better understanding of the effect a developer has on the community impacts of the freight terminal development process could benefit both railroads and communities.

6. APPENDICES

6.1 Appendix A: Research Materials

6.1.1 Edgerton Case Questionnaire: Railroad Representative

Introduction Questions

- Could you state, as briefly as possible, what the major responsibilities are for BNSF, and the municipalities, such as Gardner and/or Edgerton in the development of this project?
 - Your primary responsibility in this project?

Public Opposition

1. My understanding of this project is that BNSF purchased land in an unincorporated area of Johnson County and the initial attempt was to get the city of Gardner to annex the land which ultimately failed and then Edgerton was approached for annexation and that was successful.
 - a. Who was primarily responsible for preventing public opposition in Gardner, the public officials or the railroad?
2. My understanding is that the public officials engaged the public early in the development process of this project and began a more extensive public participation process, would you agree?
 - a. Why?
 - i. State law?
 - ii. Public support needed for annexation?
 - iii. Zoning Change Needed?
3. In order to prevent or reduce public opposition, which techniques were most effective?
 - a. Ensuring truthful information
 - b. Mobilization of supporters
 - i. How were supporters mobilized?
 1. Encouraged to attend meetings?
 2. Given additional information
 - c. Use of negotiator?
 - i. Effectiveness, why or why not?
 - d. Building trust among stakeholders
 - e. Get Media on your side?
 - f. Others
4. Biggest challenges with the approaches?
 - a. My understanding is that early on in the participation process a group came out vehemently opposed...
 - i. Who was this group made up of?
 - ii. Why so against it? Environmental? Proxy?
 - b. Supporters silenced by opposition?
 - i. Could anything be done?
 - c. Lack of public resources to retain staff with freight expertise can arm mobilizing freight stakeholders
 - d. Having different audiences present a challenge? Investors for railroad, constituents for public officials?
 - e. Others
5. What went wrong in Gardner in terms of being defeated due to public opposition given that the public was included in an early public outreach process

- a. Was there a notion that because site selection is such a sophisticated process, that BNSF is locked into that spot, and the own doesn't have to negotiate as much?
 - b. Biggest difference in Edgerton
 - i. Was successful there..
- 6. When was it first proposed to Gardner, first proposed to Edgerton?
- 7. Important to get public buy in on the project? Opposed to finding ways to get the project through..

Mitigation Measures

- 1. Given some of the negative impacts associated with this and other projects like it (such as traffic and noise), what were some of the most effective mitigation measures implemented?
 - a. Technology
 - b. Physical barriers such as sound walls
 - c. Quiet Zones
 - d. Infrastructure improvements
 - i. Do trucks take special routes?
 - 1. Difficult making them stick to route
 - e. Others
- 2. Are these worked into project plans or come up has the project develops?
- 3. How are these techniques chosen? Based on public input?
- 4. What were the greatest challenges associated with these mitigation measures?
 - a. Lack of public support and input, public money?
 - b. Funding for measures can be unclear and tough to work into original plans
 - c. Public officials and railroad officials have different priorities, audiences

Economic Development

- 1. In this case, what was most alluring about Johnson County to decide on siting the terminal there?
 - a. Existing infrastructure
 - b. Financial incentives
 - i. \$25 million from state through the stimulus program
 - c. Freight friendly zoning
 - d. Economic development and community plans that support the growth of freight
 - e. Accepting general public, public officials???
- 2. Major challenges that had to be overcome for some of those incentives?
 - a. Lack of public support
 - b. Lack of staff expertise from Joliet or Will County?
 - c. Others
- 3. Is it helpful when a town or area already has a plan in place promoting the growth of freight operations?
 - a. Could do some of the ground work for educating residents
- 4. Was local hiring a requirement of this project?
 - a. Any projects that you have worked on?
 - b. What kind of jobs go to locals?

Communication/Ending

- 1. What was the primary method of communication across different organizations?
 - i. Prompt: Committees
 - ii. Prompt: Meetings
 - 1. Were they known to multiple stakeholders, or only select?
 - iii. Prompt: Memos
- 2. Did organizations have specific freight departments or key people knowledgeable on the freight industry?
 - a. Helpful? Liaison?
- 3. Challenges that occurred?

- a. Prompt: Competition among railroad company and among other municipalities
 - b. Prompt: Railroad see the value in participation in such meetings
 - c. Prompt: Local town coordination
4. What's your perception of how effective communication was?
5. Incentives to communicate
 - a. Prompt: Receiving of property taxes
6. Disincentives to communicate
7. Would having a developer like CenterPoint to do the entitlement process help
 - a. Ultimately avoid public opposition?
 - b. When is one used, when is one not?
8. Did towns have a vision for how they wanted to grow with freight?

6.1.2 Edgerton Case Questionnaire: County Official

Introduction Questions

- What is the current status of the terminal in Gardner
- Please describe the role of your organization (Southwest Johnson County Economic Development) in the development of the terminal
 - Promotion economic development
 - Public opposition
 - And mitigation of impacts
 - Coordination with other agencies and with BNSF
- Please describe your role within the organization
- Could you state, as briefly as possible, what the major responsibilities are for BNSF, Allen Group, and public officials, say in Edgerton in the development of this inland port?
- How well did these groups communicate?
 - Did they have a reason to?
 - What issues called for communication?

Public Opposition

1. What techniques were used to prevent or reduce public opposition?
 - a. Prompt: Ensure truthful information was disseminated?
 - b. Prompt: Mobilization of supporters
 - c. Prompt: Trust built among stakeholders
2. What were the major challenges when trying to reduce public opposition?
 - a. Prompt: Competition among railroads and among municipalities
 - b. Prompt: Lack of expertise on freight industry and financial resources from towns
 - c. Prompt: Public officials and railroad officials have different priorities, audiences
3. Effectiveness of different techniques to reduce public opposition?
 - a. Prompt: Addressing concerns
 - b. Prompt: Execution

Economic Development

1. What economic development tools were used to entice the establishment of the UP terminal?
 - a. Prompt: Financial incentives
 - i. KDOT grants BNSF \$35 m in Rail Assistance

- ii. \$70 m pledged in local and state assistance for infra projects
 - b. Prompt: Freight friendly zoning
 - i. Zoned as M2: General Industrial
 - c. Prompt: Economic development/community plans supporting growth of freight industry
 - i. Attracted BNSF?
 - ii. Allowed Annexation
 - d. Prompts: Have a general public and/or public officials accepting of the project/have their concerns eased
2. What were the major challenges to executing these economic development measures?
 - a. Prompt: Lack of public support
 - b. Prompt: Unsure of what measures BNSF would respond best to?
 3. Effectiveness of the different economic development tools used?
 - a. Prompt: Economic development purposes
 - b. Prompt: Execution
 4. Answer the above questions again for economic development tools used to encourage local economic effects?
 - a. Prompt: Hiring local
 - b. Prompt: Training programs
 - c. Prompt: Promote support industries
 - d. Prompt: Marketing

Mitigation Measures

1. What mitigation measures were used to alleviate concerns caused by the terminal development?
 - a. Prompt: Physical barriers such as sound walls
 - i. Use of electric cranes at terminal
 - b. Prompt: Truck rerouting and grade separations
 - i. Prompt: State bond to fund interchange improvements, improvements to Gardner Road
2. What were the major challenges to executing these mitigation measures?
 - a. Prompt: Lack of public support and input
 - b. Prompt: Funding for measures can be unclear and tough to work into original plans
 - c. Prompt: Public officials and railroad officials have different priorities, audiences
3. Effectiveness of the different mitigation measures?
 - a. Prompt: Addressing concern
 - b. Prompt: Execution

Interagency and Inter-organization Communication

1. How would you rate the communication between public agencies and units of government, closer to strong or weak (effective, ineffective)
 - a. With BNSF
 - b. With State
 - c. Municipalities
2. What formal lines of communication were used to share information about the project?
 - a. With BNSF
 - b. With other public agencies and units of government
 - i. Prompt: Committees
 - ii. Prompt: Meetings
 - iii. Prompt: Memos
3. Challenges that occurred?
 - a. Prompt: Competition among railroad company and among other municipalities
 - b. Prompt: Railroad see the value in participation in such meetings?
 - c. Prompt: Local town coordination

4. Effectiveness of coordination
5. Informal lines of communication
 - a. Prompt: Emails
 - b. Prompt: Lunches
6. Incentives to communicate
 - a. Prompt: Receiving of property taxes, dissuade secrecy
7. Disincentives to communicate

Ending Questions

8. How do you think some of these planning issues discussed at the project development level could be alleviated?
 - a. Public Opposition
 - b. Economic Development
 - c. Mitigation Measures
 - i. Guidance documents like are available for integration into the transportation process
 - ii. Unavoidable due to the real environmental and quality of life concerns associated with these projects
9. Can interagency communication be improved by changing of allocation of funding or revenues from such projects
 - a. Projected Revenue (2007-2026):
 - i. Kansas, \$1.7 B
 - ii. Johnson County, \$1.4 B
 - iii. Gardner, \$69 M
10. You had mentioned that, in confronting NIMBY, one of the most effective techniques was having and disseminating good information in a non-emotional way.
 - a. My question is, what entity was primarily responsible for this?
 - i. How successful were they?
 1. Is this difficult if municipalities don't have freight industry experience?
11. You had mentioned that when it is a bad economy, it can be difficult to promote certain incentives for a company the size of BNSF
 - a. Did you ever address this issue, what was your approach?
 - i. Were you successful?
12. You had said that from the start of this project, public participation was heavily pursued?
 - a. First, which organization led the charge for this public participation process?
 - i. Why, because general public approval was needed for the annexation? In Joliet, the public officials and the railroad have been very open about there not being a big public participation process and they experienced minimal opposition
 - b. In the BNSF terminal case, in your opinion, what could have been done to avoid project delay?
13. Did this area have a vision for their freight development? Specific goals for how they wanted to benefit from the development?
 - a. Freight village idea?

6.1.3 Joliet Case Questionnaire: Railroad Representative

Introduction Questions

- Could you state, as briefly as possible, what the major responsibilities are for UP, CenterPoint, and public officials, say in Joliet in the development of this inland port?
 - Your primary responsibility in this project?

Public Opposition

1. In order to prevent or reduce public opposition, which techniques were most effective?
 - a. Ensuring truthful information
 - b. Mobilization of supporters
 - c. Building trust among stakeholders
 - d. Others
2. Biggest challenges with the approaches?
 - a. Lack of public resources to retain staff with freight expertise can arm mobilizing freight stakeholders
 - b. Having different audiences present a challenge? Investors for railroad, constituents for public officials?
 - c. Others
3. Hit on these points:
 - a. Not much public opposition with this project
 - b. Not much opportunity for public input and education
 - c. Did the completion of the Elwood terminal help with your project in terms of it wasn't a foreign operation to the public officials and general public?
 - i. Were Elwood officials able to advise Joliet officials?

Mitigation Measures

5. Given some of the negative impacts associated with this and other projects like it (such as traffic and noise), what were some of the most effective mitigation measures implemented?
 - a. Physical barriers such as sound walls
 - b. Quiet Zones
 - c. Infrastructure improvements
 - i. (Arsenal Road Project)
 - d. Others
 - i. Bought homes nearby
6. What were the greatest challenges associated with these mitigation measures?
 - a. Lack of public support and input
 - b. Funding for measures can be unclear and tough to work into original plans
 - c. Public officials and railroad officials have different priorities, audiences
7. Emphasize, funding of infrastructure tends to be a problem, agreeing on who pays, was this much of an issue in the Joliet case?
 - a. Would it be better if worked into original project plans?

Economic Development

5. In this case, what was most alluring about Joliet to decide on siting the terminal there?
 - a. Existing infrastructure
 - b. Financial incentives
 - i. (Intermodal Facilities Promotion Act?)
 - c. Freight friendly zoning
 - i. (Will County ordinance for container storage)
 - d. Economic development and community plans that support the growth of freight
 - e. Accepting general public
6. Major challenges that had to be overcome for some of those incentives? (
 - a. Lack of public support
 - b. Lack of staff expertise from Joliet or Will County?
 - c. Others
7. Is it helpful when a town or area already has a plan in place promoting the growth of freight operations?

- a. Could do some of the ground work for educating residents

Inter-agency Communication

9. What was the primary method of communication across different organizations?
 - i. Prompt: Committees
 - ii. Prompt: Meetings
 1. Were they known to multiple stakeholders, or only select?
 - iii. Prompt: Memos
10. Did organizations have specific freight departments or key people knowledgeable on the freight industry?
 - a. Helpful?
11. Challenges that occurred?
 - a. Prompt: Competition among railroad company and among other municipalities
 - b. Prompt: Railroad see the value in participation in such meetings
 - c. Prompt: Local town coordination
12. What's your perception of how effective communication was?
13. Incentives to communicate
 - a. Prompt: Receiving of property taxes
14. Disincentives to communicate

Ending Questions

14. In your opinion, what has to happen for unresolved issues such as funding for infrastructure to get addressed?
15. Real quality of life concerns by residents?
16. How do you think some of these planning issues discussed at the project development level could be alleviated?
 - a. Public Opposition
 - b. Economic Development
 - c. Mitigation Measures
 - i. Guidance documents like are available for integration into the transportation process
 - ii. Unavoidable due to the real environmental and quality of life concerns associated with these projects
17. Can interagency communication be improved by changing of allocation of funding or revenues from such projects

6.1.4 Joliet Case Questionnaire: County Official

Public Opposition

- Any groups form?
 - Reasons why they formed?
 - How did they impact project?
 - Cause delay, alteration, litigation?
 - Which agency took a lead in addressing public opposition
 - Towns or Railroad?
 - Techniques used to overcome opposition
 - Truthful information?
 - How was it done?
 - Effectiveness of giving truthful information in limiting opposition?
 - Challenges Faced?
 - Competition among railroads, towns?

- Mobilization of supporters
 - How was it done?
 - Effectiveness
 - Challenges Faced?
 - Lack of resources, expertise and/or financial
- Trust built among stakeholders
 - How was it done?
 - Effectiveness
 - Challenges Faced
 - Identification due to lack of freight expertise
 - Accountable to different audiences, freight and towns

Mitigation Measures (which measures most effective)

- What mitigation measures were used?
 - Physical barriers?
 - How was it done?
 - Early in plan?
 - Based on public input?
 - Effectiveness
 - Challenges faced?
 - Lack of public support and input
 - Funding can be unclear so tough to work in original plans due to funding set up by mode and generally going to passenger projects)
 - Public officials and rail officials accountable to different audiences
 - Competition limits input process
 - Truck Rerouting, grade separations?
 - How was it done?
 - Early in plan?
 - Based on public input, studies?
 - Effectiveness?
 - Challenges faced
 - Funding can be unclear so tough to work in original plans due to funding set up by mode and generally going to passenger projects)
 - Public officials and rail officials accountable to different audiences
 - Lack of public support and input
 - Competition limits input process

Economic Development (which tools most effective?)

- What economic development tools were used to increase development around terminal?
 - Entice terminal to build in the first place?
 - Prepare community/town plan to promote land use that clusters related-industry jobs?
 - How was the plan created?
 - Challenges faced
 - Lack of public support and input
 - Freight industry involvement needed to create successful plan (or freight expertise), did town have it or the involvement?
 - Lack of town resources
 - Effectiveness

- Consider development of a freight village (authority) (need better definition if I keep this in)
 - How was it created??
 - Challenges faced
 - Lack of public support and input
 - Freight industry involvement needed to create successful plan (or freight expertise), did town have it or the involvement?
 - Effectiveness
- Have friendly zoning that allows for and promotes freight operations in place?
 - How was the zoning enacted? (when, trouble passing)
 - Challenges faced
 - Lack of support and input from general
 - Freight industry involvement needed to create successful plan (or freight expertise), did town have it or the involvement?
 - Lack of town resources
 - Effectiveness
- Use financial incentives?
 - Which ones?
 - Challenges faced
 - Lack of support and input from general
 - Lack of town resources and involvement from freight industry to know what works best
 - Barrier with getting public money to freight projects... usually set for passenger only due to how grants are awarded
 - Effectiveness
- Ease public concerns
 - How
 - Presences of BNSF terminal in Elwood
 - JADA
 - Challenges faced
 - Lack of guidance documents for freight industry on how to deal with public
 - Limited public input due to competition
 - Lacking public support limits input
 - Lack of resources to understand freight well and convey to public to ease fears/concerns
 - Effectiveness

6.1.5 Email Solicitation for Interviewee Recruitment

Mr. or Ms.,

My name is Steven Mannella, an Urban Planning and Policy Masters Degree Candidate at the University of Illinois at Chicago. I am currently writing my master's thesis related to how public officials and freight developers are working to promote economic development and mitigate the impacts of intermodal freight projects given the challenges facing the relationship between public officials and the freight industry. I am under the advisement of Dr. Kazuya Kawamura, Head of the Urban Planning and Policy program at UIC.

One of the cases I am reviewing is the [intermodal terminal case]. For the next part of my thesis, I will be conducting interviews with public officials and railroad representatives involved with the development of freight intermodal terminals. **[My network contacts] recommended I contact you regarding the possibility of interviewing a representative from [institution's name].** I am hoping you may be able to recommend a

representative from [institution] that has the necessary experience with this terminal project that I could ask to participate in an interview.

I am conducting interviews to gain insight on how the relationship between the freight industry and the public sector impacts planning issues surrounding these terminal developments. [name of case] is one of the cases I have chosen to review. Specifically, interview questions will be focused around economic development, mitigation measures, and public opposition issues relevant to [case].

Interviews should not last more than an hour, and confidentiality will be held in the highest regard. If you are able and interested in participating in this project, or can recommend someone that may be, please contact me at [my phone #] or [my email] and we can further discuss. I have also attached a 1-page description of the thesis' research scope to provide for additional context.

I appreciate your time and any assistance you may be able to offer me with my project. Thank you and have a great weekend.

6.2 Appendix B: Institutional Research Board Approval

UNIVERSITY OF ILLINOIS AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Exemption Granted

November 29, 2011

Steven Mannella, B.A.

Urban Planning and Policy

412 S Peoria Street, Suite 215

M/C 348

Chicago, IL 60612

Phone: (312) 996-5240 / Fax: (312) 413-0006

RE: Research Protocol # 2011-0923

“A Comprehensive Review of the Development Process of Freight Rail Intermodal Terminals: A Case Study Analysis to Test Planning Techniques and Mitigation Strategies”

Dear Mr. Mannella:

Your Claim of Exemption was reviewed on November 29, 2011 and it was determined that your research meets the criteria for exemption. You may now begin your research.

Please note the following regarding your research:

Exemption Period:	November 29, 2011 – November 28, 2014
Sponsor(s):	None
Performance Site(s):	UIC
Subject Population:	Adults (18 years and older) only
Number of Subjects:	3 Total

The specific exemption category under 45 CFR 46.101(b) is:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
10/27/2011	Initial Review	Exempt	11/02/2011	Modifications Required
11/09/2011	Response To Modifications	Exempt	11/29/2011	Approved

You are reminded that investigators whose research involving human subjects is determined to be exempt from the federal regulations for the protection of human subjects still have responsibilities for

the ethical conduct of the research under state law and UIC policy. Please be aware of the following UIC policies and responsibilities for investigators:

Amendments You are responsible for reporting any amendments to your research protocol that may affect the determination of the exemption and may result in your research no longer being eligible for the exemption that has been granted.

Record Keeping You are responsible for maintaining a copy all research related records in a secure location in the event future verification is necessary, at a minimum these documents include: the research protocol, the claim of exemption application, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to subjects, or any other pertinent documents.

Final Report When you have completed work on your research protocol, you should submit a final report to the Office for Protection of Research Subjects (OPRS).

Information for Human Subjects UIC Policy requires investigators to provide information about the research protocol to subjects and to obtain their permission prior to their participating in the research. The information about the research protocol should be presented to subjects in writing or orally from a written script. When appropriate, the following information must be provided to all research subjects participating in exempt studies:

The researchers affiliation; UIC, JBVMAC or other institutions,

The purpose of the research,

The extent of the subject's involvement and an explanation of the procedures to be followed,

Whether the information being collected will be used for any purposes other than the proposed research,

A description of the procedures to protect the privacy of subjects and the confidentiality of the research information and data,

f. Description of any reasonable foreseeable risks,

Description of anticipated benefit,

A statement that participation is voluntary and subjects can refuse to participate or can stop at any time,

A statement that the researcher is available to answer any questions that the subject may have and which includes the name and phone number of the investigator(s).

A statement that the UIC IRB/OPRS or JBVMAC Patient Advocate Office is available if there are questions about subject's rights, which includes the appropriate phone numbers.

Please be sure to:

→ Use your research protocol number (2011-0923) on any documents or correspondence with the IRB concerning your research protocol.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact the OPRS office at (312) 996-1711 or me at (312) 355-1404. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Sheilah R. Graham, BS

IRB Coordinator, IRB # 2

Office for the Protection of Research Subjects

cc: Charles J. Hoch, Urban Planning and Policy, M/C 348


Kazuya Kawamura, Faculty Sponsor, Urban Planning and Policy, M/C 348

6.3 Appendix C: Economic Impact Parameters Utilized for Edgerton Case

The following slides were taken from a 2006 presentation by BNSF about how the terminal was expected to impact the City of Gardner, KS. This was given before Gardner deannexed the project and Edgerton annexed. This is included to give an idea of how BNSF calculated the expected economic impacts of the terminal (BNSF, 2006).

Economic Impact Analysis

- ◆ CH2M HILL/Lockwood Green
 - World Class, Independent Assessment
 - Bob Price, Senior Principal
- ◆ Methodology
 - Regional Dynamics, Inc. (ReDyn)
 - Direct, Indirect, Induced Impacts
 - Input/Output Model
 - Best Commercially Available U.S. Forecast Data
 - Greater Industry Detail
 - Multi-Regional Economic Impacts
 - Smart Transportation Interrelationships
 - Multi-Year Model



Key Assumptions

- ◆ 1350 Acre Logistics Park
 - 350 Ac. BNSF Intermodal Facility
 - 1000 Ac. Warehouse/Distribution Development
 - Third Party
 - Rail (40%)& Non-Rail (60%) Served
 - 100% within Gardner Limits
- ◆ 20 Year Timeframe
 - BNSF Intermodal Construction in '07
 - Warehouse Construction in '09



Economic Impact Analysis

- ◆ BNSF Intermodal Facility
 - \$154,360,000 Construction Cost
 - Current Dollars; Unadjusted for Inflation
 - Construction Activity: 2007 & 2008
 - \$11,440,000 Construction Related Wages
 - 143 Initial Employment Growing to 300+ by 2026



Distribution Facility Development

- ◆ Rail-Served
 - Thirteen – 30-acre sites
 - 350,000 sq. ft. Building(s)
 - Average of 1 site/year over 12 years
- ◆ Non-Rail Served
 - Fifteen – 40-acre sites
 - 500,000 sq. ft. Building(s)
 - Average of 1.25 sites/year over 12 years
- ◆ No Speculative Building



Distribution Facility Assumptions

- ◆ Construction Cost
 - \$70/sq. ft.
- ◆ Machinery & Equipment Investment
 - \$8/sq. ft.
- ◆ Annual Investment Ranges During Build-Out
 - \$66.3 to \$132.6 Million
- ◆ Employment
 - 6 Workers/10,000 sq. ft.
- ◆ Land Value Excluded
 - Currently Estimated @ \$14,000 +/- Per Acre (Agricultural Use)

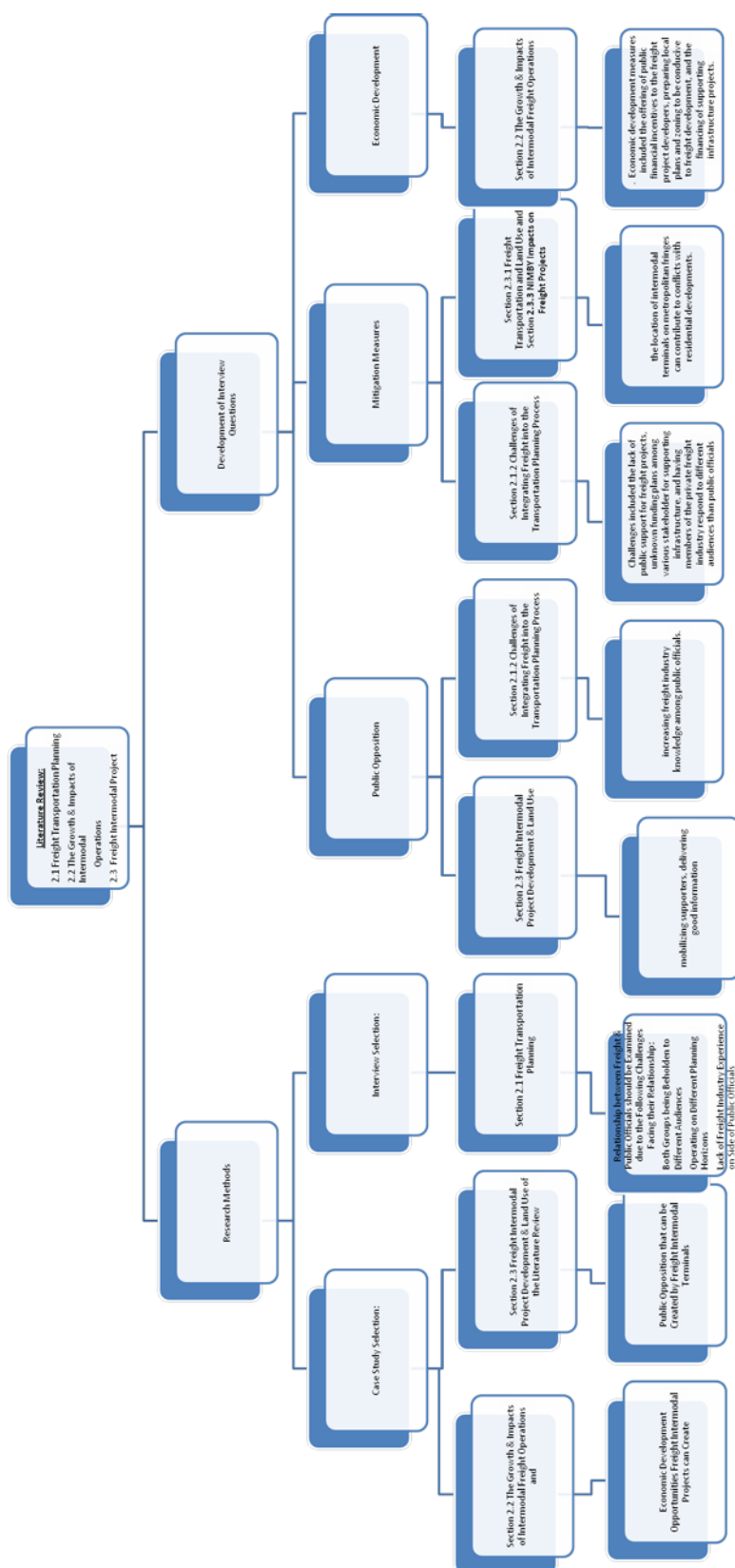


Property Tax Assumptions

- ◆ Land Value Excluded
- ◆ Applied Current Local Tax (Millage) Rates
- ◆ Capital Investment Valued at 80%
- ◆ Depreciation
 - Warehouse Buildings: 2% Per Year
 - Machinery & Equipment: 10% for Eight Years
- ◆ BNSF Unitary Tax Payments



6.4 Appendix D: Application of Key Information from the Literature Review Section



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