

The Organizational Capacity Requirements of PRHTA Once Tren Urbano is Operational

**Organizational Capacity Requirements of the Puerto Rico Highway and  
Transportation Authority Once Tren Urbano is Operational**

**Research proposal and research update**

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**I. Title: Organizational Capacity Requirements of the Puerto Rico Highway and Transportation Authority once Tren Urbano is operational**

**II. Objectives**

Once Tren Urbano enters its operational stage the Puerto Rico Highway and Transportation Authority (PRHTA) will face a rather different environment from the one it has traditionally operated in. In essence, the opening of Tren Urbano will immediately make the transportation system of the metropolitan area of San Juan more complex from an operational and maintenance perspective, as well as from a functional viewpoint (more on this below).

The research proposed in this document will attempt to determine if PRHTA, and to a lesser extent the Puerto Rico Department of Transportation of Public Works, has the required organizational capacity to operate and maintain the new transportation system once Tren Urbano becomes operational.

Additionally, if found necessary, this research aims at suggesting what changes are needed in the organizational structure of PRHTA in order to increase the capability to the required level.

**III. Motivation and background**

The procurement strategy followed for Tren Urbano established that the consortium that was awarded the contract would design, build, and subsequently operate the new rail system.<sup>1</sup> This strategy sought to take advantage of the benefits of the design-build –or turnkey– procurement, and additionally, by assigning the responsibility to operate the system to the same contractor generate an incentive for higher quality. The consortium with these responsibilities is the Siemens Transit Team, which has experience in all areas involved: design, construction, and operations and maintenance.

Under this approach, PRHTA has been relieved of some responsibilities and duties because STT and other contractors are carrying them out. PRHTA has, nonetheless, been involved in overseeing the design and construction processes of the first line of Tren Urbano –clearly a highly complex endeavor. PRHTA, as well as the Department of Transportation on Public Works, have been highly successful at this, as the relatively low construction cost increases above the estimated value suggest.<sup>2</sup>

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<sup>1</sup> Strictly speaking, the designing construction of the entire alignment was awarded to 5 different contractors. Only one of them, however, is responsible for overseeing the entire construction process and for operating the system for a fixed number of years. This is the Siemens transit Team, STT.

<sup>2</sup> When compared to other start-ups in the transit sector, Tren Urbano is one of the projects with

This is probably the result of the ample experience PRHTA has implementing and constructing transportation projects. Equally important, is the fact that the overall approach to planning and implementing Tren Urbano recognized that institutional and organizational capacity were key elements for the overall success of the project. For this reason, a group of highly experienced planners was called to become part of the planning team (Ardila, 2000). In short, until now the organizational structure and the planning and implementation approach for Tren Urbano seemed to have been highly adequate and therefore successful.

Once Tren Urbano starts operating, however, several changes will take place and consequently the tasks that PRHTA will have to carry out will change. For example, instead of overseeing the construction of the project—an area in which, as said, it has expertise—PRHTA will now have to oversee the operations and maintenance of Tren Urbano. This includes not only overseeing the actual day-to-day operations of the rail system and its trains. It includes as well overseeing activities such as the adequate integration of Tren Urbano to a feeder system, promoting an urban development pattern around the stations that increases the demand of passengers for Tren Urbano. Further, guaranteeing that the elderly and the disabled obtain full access to pay transportation service, and managing emergency situations, such as the one generated by power failures.

Some of these tasks are going to be carried out by the STT, which is in charge of the day-to-day operation and maintenance of the project. The remainder activities, at the time of writing this document, have no clear party responsible for them, which means that PRHTA will probably be directly responsible. But even in the case of the STT and even if other activities are assigned to private actors, PRHTA will still have to oversee and act as the central control of the system—precisely because it is the “owner” of the Tren Urbano project.

Unfortunately, PRHTA does not have experience at overseeing the operations and maintenance, and the other tasks described above, because this is the first heavy rail mass transit line built in Puerto Rico. Consequently, it is important to study the current organizational capability of PRHTA, and to a lesser degree of the Department of Transportation and Public Works, to see if it is prepared for the responsibilities that lie ahead once Tren Urbano opens to the public. If the research finds that the authority is not adequately prepared in terms of organizational capacity then it is important to point this out and suggest possible strategies for addressing this problem.

A final example will serve to illustrate the importance of the proposed research. Assume that because of a hurricane there is a power failure and consequently Tren

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smaller cost overruns, given that most of the increase in cost is because of changes in the specifications of the contracts.

Urbano may not run its trains for a couple of days. Despite this, there will be a significant number of passengers requiring to move around the city and would like to use Tren Urbano for this purpose. Clearly, PRHTA has to be able to provide an alternative service, probably using buses. PRHTA, however, does not own buses and will have to resort to AMA, the metropolitan bus authority, which owns and operates the bus fleet. In cities such as Boston or New York it is the same entity that is in charge of the bus service and the rail service, and has, first, adequate plans for handling this type of emergencies, and second, has the capacity to design and implement these plans. For the Tren Urbano case, the question that remains is if the current organizational structure will allow PRHTA, and the Department of Transportation and Public Works –the parent agency– to respond in an adequate way to emergency situations.

In short, the proposed study is important because it will determine if the parent agency of Tren Urbano is prepared for carrying out the new responsibilities that the operation of Tren Urbano require. Success for this project is not only to carry certain amount of passengers, it is rather that the project operates as smoothly as possible in all the dimensions that the operation of a heavy rail transit line has.

#### **IV. Research methodology**

As seen above, this research project aims at determining if PRHTA has the required organizational capacity to meet the new demands that the operation of Tren Urbano will imply. This project *is not* about evaluating the current capacity and performance of PRHTA. As argued above this does not seem necessary because PRHTA is performing adequately. The activities that I will have to carry out are the following:

- a) Literature review: I have been reviewing part of the literature on organizational capacity and organizational effectiveness. One conclusion already seems clear and it is that these concepts are not uniquely defined, because organizations are difficult to understand and several distinct theories try to explain them (see for example Price and Mueller, 1986, Cameron and Whetten, 1983, Starbuck and Nystrom, 1983, Harmon and Mayer, 1986). By the end of the literature review I should be able to have a thorough understanding of the concept of organizational capacity and the key elements or determinants.
- b) Identify and analyze case studies: I will identify successful cases of transit authorities in other cities in the U.S. and analyze them from an organizational perspective. Specifically, I will be trying to figure out patterns within these organizations with the objective of creating, together with the conclusions of the literature review, an analytical framework for understanding the requirements that PRHTA will face once Tren Urbano opens.
- c) Required information for fieldwork: from both the literature review and the analysis of the case studies I should also determine the information that I need to collect during my fieldwork in San Juan in January.
- d) Fieldwork: in San Juan I would interview several key actors within PRHTA and

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within the Department of Transportation and public works, and maybe even within the metropolitan bus authority. Tentatively, I will ask my interviewees how they see the current organizational structure of PRHTA in light of the challenges that it will face in the future. Additionally, I will ask them to recommend changes if they consider them necessary and to explain the rationale for their choices.

- e) Comparison: with the information about PRHTA and with the analytical framework that I developed I should be able to determine if PRHTA has weaknesses and in which areas.
- f) Write up: the final activity is to produce the document with the summary of the research and findings.

### V. Research Update

The results of the literature review I have carried out thus far have allowed me to improve the definition and understanding of organizational capacity, the subject of my research. A better definition of organization capacity is: Organizational capacity is the ability of a government agency to institute the structure, routine tasks, and coordinate the efforts of talented people to convert a policy –the operations of Tren Urbano, for the case of PRHTA– into real achievements (Goggin, et al., 1990).

This definition is better because it introduces some of the dimensions of organizational capacity. Specifically, organizational capacity is a function of organizational structure, human resources, and funding (Goggin, et al., 1990). Organizational structure refers to the different units and departments that constitute the organization. Human resources refer to the quantity and quality of the people employed to perform the tasks in each unit within the organization. Finally, organizational capacity is also dependent on the funding available to the units and the human resources to perform their tasks.

In addition, Chisholm (1989) in his analysis of the transportation sector organization in the San Francisco Bay area concludes that formal and informal relationships with other organizations also determine organizational performance. In particular, he finds that the San Francisco Bay area transit agencies –seventeen in total– lack a central agency that coordinates their actions. While in certain instances they compete for passengers, overall through informal mechanisms they manage to coordinate their actions. This reduces the level of unnecessary competition and saves resources.

I have also conducted a preliminary assessment of the organizational capacity of the PRHTA. I based my evaluation on secondary information that I found at hand, from sources I collected for my research last year, and from articles that have been published in the last 5 years about the authority in the El Nuevo Dia newspaper.

My main conclusions is that currently, PRHTA's functions span from planning to operating road, highway, and bus transportation systems and it also oversees privatized

projects and the construction of a very complex project, Tren Urbano. Clearly, this variety of functions is very demanding on the organization and could hamper its performance.

PRHTA has a simple structure, with 4 directorates: Infrastructure, Traffic and Operations, Administration and Finance, and Mass Transportation. I was unable to find a more refined version of the structure, something that I will have to do during my visit to San Juan. PRHTA has repeatedly shown to be a leader in innovative contracting and financing of projects, as the Tren Urbano hybrid turnkey contract shows. Finally, if the amount of money invested is a sign of success, then PRHTA emerges as a good performer, because it spent over \$5.5 billion in transportation infrastructure in 8 years, including the resources spent on Tren Urbano.

This suggests that PRHTA is currently performing in a satisfactory manner and I can therefore infer, that it has the required institutional capacity to perform the tasks and duties currently assigned. Unfortunately, this small evaluation does not allow me to discard my research question: will PRHTA have the organizational capacity to perform in the new and unknown environment generated by Tren Urbano becoming operational. For one thing, PRHTA has never performed these tasks. For another, even if the capacity exists, it is necessary to analyze the organization to find if the capacity exists or if changes are needed.

Further, the existence of the Systems and Test Track Turnkey contractor does not invalidate my research question. If the STTT contractor is going to be in charge of the new responsibilities, then it is necessary to see if the contract provides for this, or if it is necessary to modify it. Second, even if the STTT contractor does have the capacity and the contract can be modified, it is still necessary to determine if PRHTA's structure has to be changed in any manner.

Finally, from this work I have been able to start the design of my fieldwork. One thing is clear, however, and it is that finalizing a framework before carrying out the fieldwork is difficult if not impossible. This happens because there are many theories and approaches in organizational analysis and to choose one I have to know certain characteristics of the organization. For example, one key question is how PRHTA interact with other organizations such as AMA. In addition, I now have a better idea of the types of questions that I should be asking in my fieldwork and also about the information that I have to gather.

## **VI. References**

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