



OCTOBER 2008

A Report from the Bureau  
of Governmental Research

# street smarts

## MAINTAINING AND MANAGING NEW ORLEANS' ROAD NETWORK



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### **ACKNOWLEDGMENTS**

BGR gratefully acknowledges the assistance of the New Orleans Department of Public Works and the Sewerage & Water Board of New Orleans in the preparation of this report.

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The Bureau of Governmental Research is a private, non-profit, independent research organization dedicated to informed public policy making and the effective use of public resources for the improvement of government in the New Orleans metropolitan area.

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## INTRODUCTION

The traffic circulation system of a city is what keeps its economic heart pumping. Streets deliver goods and services. They convey workers to jobs and residents to their homes. They transport visitors from out of town. Every vehicle can be considered a cell that supports the city's economic health.

When the streets deteriorate, that health suffers. It becomes more difficult for goods and services to move in a timely manner. Commuters curse the potholes as emblems of decline. Roller-coaster streets diminish the appeal of neighborhoods, potentially hurting property values and the tax base they support. Visitors leave with the impression that the city is decaying.

New Orleans' circulation system has for years been in such a state of ill-health. The last time the city surveyed its streets, in 2004, it found that 32% of the streets needed major rehabilitation or total reconstruction and another 34% were in need of immediate maintenance. In short, two-thirds of the city's streets were crying out for some level of roadwork. The disaster of 2005 made a bad situation much worse.

The problem stems largely from chronic underfunding and a failure to invest in maintenance. Prior to the disaster, the city was spending \$20 million to \$30 million a year on major street repairs and reconstruction. It expects to spend \$162 million of locally generated capital funds during the next three years. It spends a mere \$3 million a year on maintenance. These expenditures stand in stark contrast to the need. The Department of Public Works estimates that it would cost \$3 billion to meet rehabilitation and reconstruction needs and another \$40 million to \$45 million a year to properly maintain the streets.

The funding problem is huge. Solving it will require a comprehensive analysis of the community's infrastructure needs – whether for roads, sewer, schools or other public buildings – as well as tax capacity, structure and expenditures. It is a pressing project, but one that is beyond the scope of this report. BGR will begin the analysis in the coming months.

There are other problems that can be addressed in the short term. These include the utter failure to invest in preventive maintenance and rehabilitation, inadequate coordination with utilities, and the unsophisticated, and at times ad hoc, process for managing street work. Addressing these problems will help the city to prolong the life of its streets and make the most of the limited available resources.

Effective street management begins with a good pavement management system. This report explores the components of such a system, how it works and its potential applications in the City of New Orleans. It also examines the issues surrounding coordination and funding.

## HOW PAVEMENT MANAGEMENT WORKS

Pavement management is the process of overseeing the repair and maintenance of street networks. It is a challenging task, but one that has been facilitated in recent years by the use of technology-based management programs, known as pavement management systems.

A pavement management system is a tool that guides decisions on which roads to fix, when and by what method. It provides systematic and consistent analysis. Using critical data on street conditions, a computer program calculates costs, evaluates appropriate approaches to maintenance, rehabilitation or reconstruction, and produces a list of priorities. The goal is to identify the roadwork needed to preserve street quality for the longest time at the lowest cost.

A pavement management system has three primary elements:<sup>1</sup>

- A computer database that contains an inventory of streets and their condition.
- A data collection method to update street network conditions on a regular basis.
- An analysis program to evaluate repair strategies and rank projects.

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## METHODOLOGY

In conducting this study, BGR interviewed numerous professionals, including:

- Administrators and staff of local utility companies and government agencies in New Orleans and other cities.
- Pavement management experts with organizations such as the Federal Highway Administration and the American Society of Engineering Education.
- Engineering and environmental science professors at universities in New Orleans and elsewhere.
- Transportation planners.

BGR reviewed books, reports, academic papers and web sites on pavement management systems. It also reviewed transportation plans in various cities and pertinent laws and legal documents.

In addition to researching pavement management systems in general, BGR conducted an in-depth survey of street administrators in cities across the country, including Baton Rouge, Gainesville, Fla., Portland, Ore., San Francisco, Salt Lake City, and Vancouver, Wash. It also interviewed public works officials in Boston, Los Angeles, San Diego and San Francisco on coordination with public and private utilities and other issues.

### Inventory and Condition Survey

A pavement management system begins with a comprehensive street network inventory and a condition survey. The inventory lists each street, with its length, width and surface type, and identifies whether curbs are present. An inventory typically divides streets into manageable sections corresponding to street block addresses and major intersections. It specifies the

agency with responsibility for maintenance – federal, state or local. Traffic counts, including the type of traffic (truck, bus or car), round out the picture.<sup>2</sup>

A pavement condition survey collects critical data on the condition of the street. This includes the level and type of distress, the presence of utility cuts, and other relevant factors. The surveyor categorizes the streets according to the level of distress and the magnitude of the roadwork that is needed. The categories can be broad ones, such as the following:<sup>3</sup>

- Like new or little distress. No immediate work is necessary.
- Minor distress. Routine maintenance, such as patching or sealing, is necessary.
- Moderate to severe distress. Rehabilitation, such as an overlay, is necessary to prevent failure.
- The road has failed. Reconstruction is necessary, because lesser approaches are no longer cost-effective.

A condition survey can also assess conditions by ride quality or the type of distress. Different types of distress often require different maintenance and rehabilitation strategies.<sup>4</sup>

To keep condition data current, a city should survey its streets in two- to five-year cycles. The older the data, the less accurate it will tend to be.

### Data Collection

A pavement management system is only as good as the data that support it. Accurate information is critical.

Data collection methods range from walking surveys and so-called “windshield surveys” (driving down the street and taking notes) to the deployment of specialized vehicles equipped with lasers, cameras and seismic sensors. Data collection can be conducted by city personnel or outsourced to private companies. The methods a city deploys depend in part on cost considerations and the size of the street network.

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BGR surveyed a number of cities on their pavement management processes. Most of those that responded contracted for the initial data collection. All deployed in-house staff to conduct annual updates, using windshield and walking surveys and armed with nothing more than condition index manuals and hand-held computers. The cities covered their entire networks in cycles ranging from two to five years.<sup>5</sup> None of the street managers believed that contracting for automated data collection would produce superior data or save money.

### Analysis and Project Ranking

A modern computer analysis program is the repository for the data from the streets inventory and condition survey.<sup>6</sup> It sorts the data as needed – separating major arterial roads from minor streets, and grouping them according to condition and the type of roadwork needed. It typically plots these results on a Geographic Information System (GIS) map.

The program merges the data with other factors to score and rank projects for maintenance, rehabilitation and reconstruction. To reach the priority score for a section of roadway, the program evaluates the condition against factors that indicate demand or affect the rate of deterioration. Key factors include:

*Total traffic.* The total number of users per road will indicate how many drivers benefit from the road being smooth – or suffer from its bumps, as the case may be. For example, a thoroughfare like Canal Street is more important to the city as a whole than a minor residential street that terminates in a cul-de-sac.

*Truck Traffic.* Truck routes deteriorate far more quickly because of the weight of 18-wheelers and their cargo. These routes are critical, particularly in a port city like New Orleans, because they carry goods and employ drivers, and therefore nourish the economy.

*Bus Traffic.* Due to their weight distribution, buses tend to cause the greatest damage to pavement.<sup>7</sup>

*Utility Cuts or Excavations.* Utility cuts significantly weaken both the pavement through which the cut was

## GLOSSARY

There are no universal categories for labeling roadwork. Different government agencies may use different terms to refer to the same work. The Federal Highway Administration found this to be such a problem that in 2005 it issued a memorandum attempting to standardize roadwork labels. For readers' sake, this report uses three familiar terms, defined below.

**Maintenance** (often called M&R, for “maintenance and repair”) refers to the least intensive and least costly group of activities – those designed to address minor or spot distress to make the ride more comfortable or to extend the life of the pavement by preventing deterioration. Typical activities include preventive maintenance (such as sealing), corrective maintenance (patching and pothole filling) and emergency repairs (to fix pavement blow-ups or sinkholes). Such work is typically paid for with operating funds.

**Rehabilitation** refers to an intermediate level of roadwork on streets with moderate to severe distress. Overlays and panel replacements are typical examples of rehabilitation. Rehabilitation can be considered “minor” or “major” depending on the extent and thickness of the overlay or panel replacement. Such work is paid for with either operating or capital funds.

**Reconstruction** refers to the most intensive and costly approach. It applies to streets that have deteriorated to the point of failure. It entails complete replacement of the surface and substructure of the roadway. Such work is typically paid for with capital funds.

made and the surrounding pavement. A utility cut can decrease the life of the surrounding pavement anywhere from 18% to 50%.<sup>8</sup> According to one study, significant weakening from utility cuts can extend more than four feet from the location of the cut itself.<sup>9</sup>

## MAINTENANCE: THE FULCRUM OF EFFECTIVE STREET MANAGEMENT

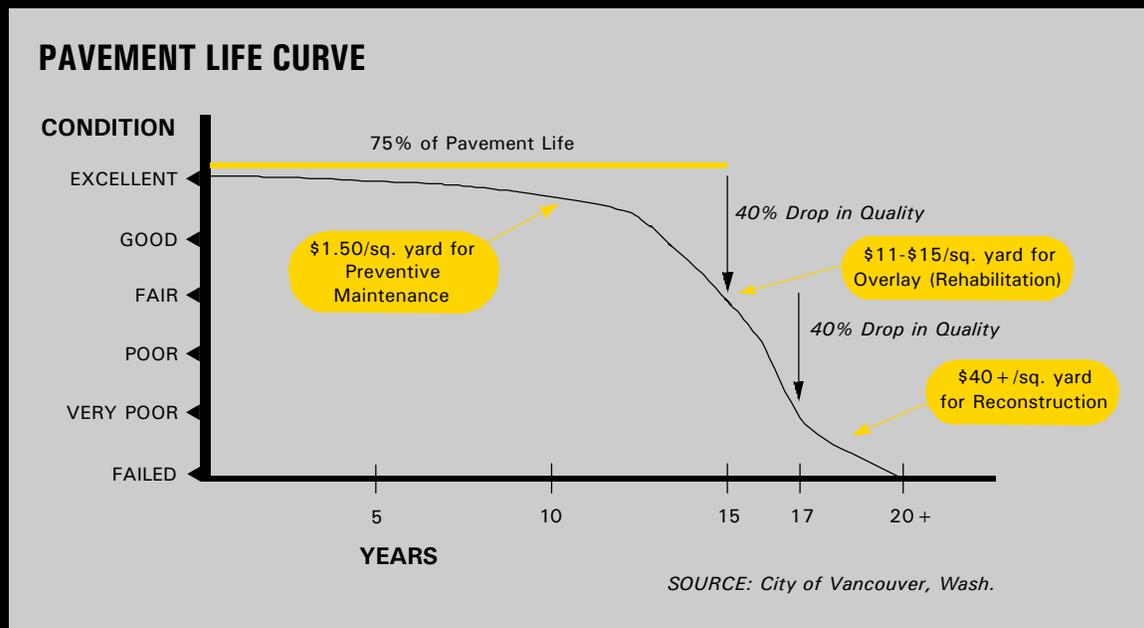
A pavement management system will tend to emphasize maintenance. That's because the cost savings derived from such a system rely on extending the performance life of streets that are in good condition. Timely preventive maintenance and rehabilitation keep such streets from reaching a level of deterioration that will require reconstruction – which is exponentially more costly than maintenance. Pavements tend to deteriorate slowly during their first several years, and then begin to deteriorate rapidly. The chart below illustrates the cost of deferring maintenance on a deteriorating roadway.

There is, however, a counterintuitive – and politically thorny – aspect to this. The worst streets, naturally, are the ones that inspire the most complaints to elected officials. Focusing on maintenance reduces the emphasis on investing in the worst streets first.

Yet focusing street funding on reconstructing the worst streets will cost far more per mile and leave little for needed maintenance and rehabili-

tation. While this approach may go a short distance toward appeasing citizens who must endure bumpy rides, it will neglect streets that are due for maintenance or that can be saved through rehabilitation. As time passes, those streets will deteriorate to the point where they, too, need reconstruction, and the wasteful cycle repeats itself.

The ranking of projects must address two needs: Good quality streets are investments that a city must protect against deterioration, and poor quality streets are hazards against which a city must protect its citizens and their vehicles. Logic dictates the division of expenditures to accommodate both needs, with an appropriate portion of annual operating expenditures provided to address a priority list for timely preventive maintenance and rehabilitation and a portion set aside for emergency repairs. In the same way, capital funds must be divided between rehabilitation of streets that can still be saved and reconstruction of those that are total losses.



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*Deficiencies in Subsurface Infrastructure.* Leaking sewer, water and drainage lines tend to undermine the foundation on which a street rests.

Other factors come into play in determining the rate of deterioration. In New Orleans, more than elsewhere, the poor soil conditions that plague many areas lead to either greater upfront costs or more rapid deterioration. As a general rule, pavement type and traffic being equal, streets built on solid ground will have a longer life expectancy than those built on drained swampland or otherwise weak ground.

Once these factors have been used to rank projects within maintenance, repair and reconstruction categories, the computer analysis can predict the financial consequences of inaction. It can also project the most cost-effective allocations of resources over a given period of time. Cities can use this information to inform resource allocation decisions.

### Decision Making

The pavement management system provides government officials with an objective assessment of street conditions, costs, and the proper timing of maintenance and other roadwork. It helps rationalize the decision-making process, increase transparency and provide a basis for developing comprehensive plans.

Properly used, a pavement management system will form the basis for decisions about roadwork. It is, however, only a tool, and must be used with an appropriate degree of flexibility. Adjustments may be required to account for factors that do not enter into the calculations related to street condition. For example, the timing of a repair might be adjusted to coordinate with subsurface work by utilities. This avoids wasting funds on a street that will soon be dug up for repairs.

In addition, priorities might be adjusted to direct resources to support economic development projects or areas targeted for redevelopment. Though such targeted projects might diverge from the pavement management priorities, the benefits they produce may, in some instances, be worth the change in priorities. Aside from the general benefits to the public, such

exceptions may enlarge the tax base. Pavement management software can assist in such decisions by calculating the cost of rearranging project priorities.

Ultimately, someone must make the final decision on funding priorities. The funding decision falls to elected officials, opening the door to negotiations and rearrangement of priorities based on political considerations. Most street administrators surveyed by BGR reported that political considerations were a minor factor in deciding specific priorities. The main problem many of them reported was insufficient funding for maintenance.

## PAVEMENT MANAGEMENT IN NEW ORLEANS

The City of New Orleans does not currently have a pavement management system in place. Public Works is equipped with little more than spreadsheets and GIS maps for managing its streets. The pavement condition map was last updated in 2004.

Operating funds go entirely to emergency repairs and the deployment of special trucks that fill potholes. Capital funds are divided among major streets (75%) and minor streets (25%). Major streets are sorted by known condition, from “excellent” to “failed.” Those needing rehabilitation or full reconstruction are prioritized in a five-year plan. Those approved for federal funding participation receive top priority. Minor streets are also sorted by known condition, but priority lists are submitted to City Council members, by district, for their consideration. Each council district receives an equal amount of funding. Put simply, the city’s approach is a crude combination of triage, best guesses and political considerations.

To begin to address these problems, the department has made a pavement management system one of its top priorities, and is actively seeking funding for it. Public Works is currently examining a customized computer program called the Deighton Total Infrastructure Management System, which Baton Rouge has used and rates highly. Because the Deighton software is sophisticated, it is expensive and requires technical expert-

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ise.<sup>10</sup> Public Works considers it preferable to some of the other commonly used programs because it can address drainage and other non-street infrastructure.

Public Works hopes to outsource data collection. It is currently developing a request for proposals for the initial citywide effort, which it expects to cost approximately \$1.5 million. Thereafter, it hopes to outsource data gathering in four- or five-year cycles, with 20% or 25% of the streets surveyed each year. The yearly assessments would cost \$300,000 to \$375,000 per year depending on the frequency. The surveys would be conducted with a specialized van that gathers video footage, still pictures and data from sensors.

Public Works' proposal to outsource the updates differs from the practice of the cities that responded to BGR's survey. Public Works believes that the cost of outsourcing has diminished to a level comparable to windshield surveys conducted by city personnel. A rough analysis prepared by BGR lends support to this claim.<sup>11</sup>

Public Works cites other advantages that outsourcing has over in-house data collection. It believes that outsourcing automated surveys would ensure objectivity and yield more accurate results. Its director is also concerned that the current pay scale is inadequate to attract qualified applicants for in-house work. However, while Public Works is focused on outsourcing, it remains open to the option of combining adequately funded in-house surveys with outsourcing of occasional automated surveys.

## **BOLSTERING SOUND MANAGEMENT**

A pavement management system requires the investment of significant funds in data gathering, technology and personnel. A city should not make such an investment only to ignore the guidance that a pavement management system will provide. Yet, as discussed above, it must make adjustments to take into account legitimate factors that do not enter into the engineering analysis. The key is to make room for such adjustments while controlling the potential for excessive political interference.

In theory, the use of a pavement management system should mitigate interference by providing the public and policymakers with objective data and analysis against which changes to priorities can be evaluated. It is harder to push politically motivated changes when they contradict a system-wide analysis prepared on a consistent basis.

There are a number of steps that a jurisdiction can take to reduce unwarranted political interference and bolster sound management.

*Establishing Authority.* A city could, by ordinance, require the use of a pavement management system to prioritize street maintenance, rehabilitation and reconstruction activities.<sup>12</sup> The ordinance could also require that any significant deviations from the established priorities occur only in accordance with formalized criteria and receive specific approval from the governing body. It could further require that the city deploy the pavement management software to calculate the inefficiency, and therefore the cost, of proposed deviations.

*Making the Case.* The public is more likely to support sound pavement management if it understands the city's plans to address its streets – when, why, how and at what cost.<sup>13</sup> Technology now makes it possible to communicate clearly via the internet the priorities produced through the system and the rationale behind them.

*Limiting Deviations.* Finally, a city can impose limits on expenditures outside of the priorities generated by the pavement management system. For example, it can limit deviations for policy reasons, such as support of economic development projects, to a certain percentage of available funds.

## **UTILITY COORDINATION AND OVERSIGHT**

Coordination with utilities is an important consideration in timing street work. Any public works department faces the challenge of coordinating projects so that it doesn't waste resources on a street that a utility will soon dig up for repairs. By the same token, a util-

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ity can save money it would have spent on repaving the street. The Sewerage & Water Board, for example, saves at least 40% of project costs by properly timing subsurface work with Public Works' paving projects. This is because the city picks up paving costs.

BGR surveyed three cities where sewer/water agencies are independent from the city's streets department. All of them work aggressively to coordinate street projects with utility work to maximize savings and minimize utility cuts.

### **Coordination and Oversight Efforts in Other Cities**

Boston, San Diego and San Francisco all work to minimize street cuts on the front end through long-term coordination efforts, beginning with monthly coordination meetings. To ensure coordination of street projects with roadwork, the cities require utilities to regularly report any road excavations they expect to carry out. San Francisco requires a five-year outlook, updated every six months. Boston requires a two-year time horizon, updated each year.

San Francisco's public works department has one employee devoted entirely to coordination issues. The department regularly reviews utilities' long-term plans to determine opportunities for coordinating excavations, then notifies each affected utility. It also notifies all utilities of scheduled roadwork at least four months prior to the start of construction. Boston's public works department releases an annual plan of expected roadwork. San Diego and San Francisco both compile data and share information via interactive maps. San Francisco places its five-year plan on a GIS map, which is available on its web site.

The three cities keep these plans – and the integrity of the streets – in check through moratoria on excavations of new streets. Except in the case of an emergency repair, San Francisco forbids excavations on new pavements for the first five years. Boston also uses a five-year moratorium, although utilities may apply for exceptions. San Diego imposes a three-year moratorium.

All three cities charge fees to utilities that excavate and repave streets. These come on top of whatever costs the utilities incur in restoring streets. Both Boston and San Diego impose extra fees on the excavation of streets under moratoria. For streets less than five years old, Boston requires a fee totaling 100% of what it would cost for the city to replace the pavement. Thereafter, the cost is calculated on a sliding scale, with cuts on older pavements triggering lower fees. San Francisco sets fees based on the size of the excavation and the age of the pavement, with smaller cuts on older pavement being cheaper.

In San Francisco, the department of public works has the power to fine utilities for violations of the excavation code. It can also ask a court of law to require the utility to stop work and assess additional fines. Furthermore, a violation of the excavation code is considered a criminal offense with criminal penalties.

### **Coordination and Oversight in New Orleans**

There are a number of entities with assets either on or below New Orleans' streets. These include the Department of Public Works, the Department of Parks & Parkways, the Sewerage & Water Board (the SWB), the state Department of Transportation & Development, AT&T, Cox Communications and Entergy.

In New Orleans, the poor condition of the street network has been compounded over the years by a lack of aggressive oversight and coordination of street work. Recognizing the problems created by the lack of coordination, voters in 1995 approved amendments to the City Charter requiring the SWB to coordinate its repair, maintenance and construction projects with city agencies, including Public Works.<sup>14</sup> To this end, engineers from Public Works and the SWB collaborate on major construction projects.

For broad coordination purposes, Public Works distributes to other agencies a plan for large-scale pavement work (i.e., reconstruction and rehabilitation) scheduled in the next year. Utilities are not required to submit long-term plans. Representatives from public and private utilities and transportation agencies do meet infor-

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mally as the Utility Coordination Council to discuss construction plans. While the coordination council is supposed to meet monthly, BGR received conflicting information as to whether that actually happens.

New Orleans lacks the basic tools to discourage utility cuts on new streets and to encourage coordination. The New Orleans Municipal Code does not impose penalties for violations of excavation rules. The city does not impose a moratorium on the excavation of new streets, and its excavation fees are too low to discourage utility cuts or pay for coordination and monitoring activities. The fees have not been updated since 1954, and it has collected no fees from the SWB since 1987.

A related problem is oversight. Public Works is responsible for a permitting process that covers utility cuts. Utilities wishing to perform a utility cut for subsurface work must first obtain approval from Public Works for each proposed utility cut unless the cut is for an emergency.<sup>15</sup> The City Code also requires a utility to restore the area of the cut and warrant the restoration, to pay fees and to make deposits to guarantee compliance with excavation standards. Public Works is supposed to witness the restoration and then return a year later to determine whether it has held up. According to the department's director, however, Public Works lacks the manpower to carry out that monitoring.<sup>16</sup>

The utility that conducts the most excavations is the SWB, and Public Works cites problems tracking its work. Public Works claims that the SWB's in-house work crews do not fill out the proper paperwork to notify Public Works of excavations. This, Public Works says, impairs its ability to consistently inspect restoration work, opening the door to inadequate restorations.

The SWB disputes that its crews fail to give notice. It asserts that it notifies Public Works of excavations on a daily basis; that it fully complies with Public Works' requests for notification; and that Public Works has not told SWB it is concerned about notification or the quality of its work.

While Public Works and the SWB give opposing accounts of this communication issue, the two agencies agree that a more sophisticated communication structure is needed, and both look forward to opportunities to enhance information sharing.

Given the degradation that excavation cuts cause, it is critical that the city improve coordination and enhance Public Works' oversight and enforcement authority. This would require reforms to establish appropriate moratoria and fees, and to provide penalties for non-compliance. It would also require additional funding for manpower.

## LOCAL FUNDING ISSUES

New Orleans' Department of Public Works oversees approximately 1,600 miles<sup>17</sup> of streets, exclusive of federal highways (such as Interstate 10) and state highways (such as Claiborne, Broad and Tulane). Public Works also maintains the city's curbs and catch basins, and about 80% of its drainage lines. The department's total operating budget is about \$20 million. Parking enforcement consumes \$9.3 million of this budget; of 160 employees, 120 are involved in parking control.<sup>18</sup>

Roughly \$3.5 million, drawn entirely from a 1.4-mill dedicated property tax, goes to maintaining roads and drains. The city out-sources pothole filling (using the "Pothole Killers") and splits funding among in-house staff and private contractors for drain maintenance and emergency repairs of major breaks or sinkholes that make driving hazardous. Capital funds, meanwhile, are dedicated almost entirely to reconstruction of the city's worst streets. The city spends negligible amounts on preventive maintenance and rehabilitation.

Maintenance spending in other cities varies. Baton Rouge, like New Orleans, manages about 1,600 miles of streets. However, Baton Rouge invests far more in annual road maintenance. This year, Baton Rouge allocated \$26.4 million in operating funds to street maintenance and had more than 160 employees dedicated to roadwork.<sup>19</sup> Portland, with about 2,100 miles, spent roughly \$50 million in annual operating funds on maintenance.

## MAINTENANCE SPENDING

What various jurisdictions budgeted in operating funds to maintain streets, 2008.

Jurisdiction	Miles*	2008 Funding	Funding Per Mile
Portland	2,100	\$50 million	\$23,810
Baton Rouge	1,600	\$26.4 million	\$16,500
Vancouver	575	\$3.7 million	\$6,435
Gainesville	360	\$1.8 million	\$5,000
New Orleans	1,600	\$3.1 million	\$1,938

\* Refers to centerline, or linear, miles rather than lane miles.

Vancouver and Gainesville reported significantly less funding per mile than did Portland and Baton Rouge. However, Vancouver and Gainesville, using their pavement management software, both calculated that their funding was well short of the need. Vancouver reported that its maintenance funding was only two-thirds of its estimated need. Gainesville reported that its funding was less than one-fifth of what it needed.

New Orleans' roadwork needs are significant. The last time the city surveyed its streets, in 2004, it found that 14% needed total reconstruction, 18% were salvageable with rehabilitation, and the remainder were split evenly between streets that were in need of immediate maintenance and those that needed no immediate roadwork. In short, two-thirds of the city's streets were crying out for some level of roadwork.

Since then, of course, the situation has changed. Flooding from the disaster of 2005, coupled with traffic from construction trucks and heavy machinery, undermined streets that had been in fair condition. It made streets in bad condition much worse.

Fortunately, FEMA and Federal Highway Administration repair and overlay projects are mitigating that damage. FEMA is paying for a multitude of individual repairs to streets, curbs and sidewalks based on damage that inspectors determined had resulted

from the 2005 disaster. This is a patchwork of minor repairs rather than comprehensive rehabilitations. The Federal Highway Administration, by contrast, is spending about \$100 million on comprehensive overlays on a number of major thoroughfares.

The Office of Recovery Development and Administration has designated \$21.8 million<sup>20</sup> of \$400 million in Community Development Block Grant

(CDBG) funds for roadwork. It could invest additional amounts in rehabilitating and rebuilding streets.

Once federal resources dry up, the city will have to fund maintenance at a higher level to preserve its streets. It will also need to make significant capital investments in order to address the decades of neglect that have led to the current rehabilitation and reconstruction needs.

The Department of Public Works estimates that its annual maintenance budget should be in the range of \$40 million to \$45 million per year – more than 11 times what it is now. It believes its maintenance crew should be three to five times bigger than it is now. Funding levels for maintenance vary widely from city to city, and it is beyond the scope of this report to determine what precisely New Orleans needs. However, the expenditure levels in other cities suggest that Public Works' projection of at least \$40 million per year may not be out of line.

Public Works estimates it would take at least \$3 billion to address the rehabilitation and reconstruction needs of New Orleans' streets.<sup>21</sup> Available resources fall far short of the need. Before the disaster of 2005, the city was spending about \$30 million per year on capital projects. In 2007, it issued bonds for another \$25.8 million. It projects spending an additional \$162 million during the next three years.

Because the capital needs are so great, it would take

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many years of aggressive maintenance and adequate capital funding before capital dollars could be redeployed from rehabilitation and reconstruction toward buying improvements that other jurisdictions enjoy. These include relatively basic items such as the installation of curbs and catch basins in the residential areas that lack them, traffic flow enhancements and city-funded sidewalk repairs. For the meantime, Public Works is exploring ways to revive the city's old pavement lien program, which would allow homeowners on a particular block to fund their own street improvements.

Public Works estimates that a pavement management system itself would cost approximately \$1.6 million up front.<sup>22</sup> Based on spending in other cities and information from Public Works, BGR estimates it would cost \$500,000 to \$600,000 per year to operate.

Allocating adequate resources to maintenance will require higher taxes, a reallocation of resources or a combination of both. The city could cover a large portion of the projected \$40 million maintenance need simply by redirecting income generated by the Department of Public Works back to the department itself. Public Works projects that traffic tickets generated by the new red light cameras will net the city's general fund \$10 million in new income next year. It projects that net revenue from parking enforcement will grow to at least \$8 million. That amount that could increase through expanded enforcement.

The \$22 million balance could come from increasing and reallocating property taxes. In 2008, one mill generated \$2.2 million in property tax revenue. To cover the balance and provide a maintenance budget of \$40 million, New Orleans would have to raise the existing dedicated tax from 1.4 to 10 mills, an increase of nearly 7% in the citywide property tax rate. It could begin by rolling forward the existing dedicated streets millage by .5 mills. New Orleans could also explore reallocating funds currently pinned to the economic development trust fund (currently 1.8 mills).

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## CONCLUSION & RECOMMENDATIONS

New Orleans' street network has been neglected for a long time. This has put the city in a deep hole, and unfortunately it falls upon the current generation to begin the steep climb out. New Orleans' problems have been compounded over the years by the lack of effective oversight and shortcomings in the coordination of street work with subsurface work by utilities.

It is time to take this situation in hand by beginning the long-term financial planning needed to address the declining infrastructure. It is also time to implement measures that will help prolong the life of streets and make the most of limited resources. These measures include a greater focus on street maintenance. Extending the life of a street through maintenance costs a fraction of the price of reconstruction.

The city can improve street management by introducing a sound pavement management system. Such a system, properly used, will help the city determine the most cost-effective approaches to street investments, prioritize street projects rationally and schedule maintenance work in a timely manner.

The city can also take immediate steps to improve coordination and oversight of utility excavations. This will help to reduce unnecessary weakening of the streets.

With all of this in mind, BGR makes the following recommendations.

### **Establish a Pavement Management System**

To better protect the public's investment in streets, the Department of Public Works should create and maintain an effective pavement management system. The city should provide adequate funding for that purpose.

### **Fund Preventive Maintenance and Rehabilitation**

To take advantage of efficiencies from maintenance and rehabilitation, the city should:

- 
- Explore raising taxes and/or redirecting resources, including income from parking and red light camera tickets, to increase funding for timely maintenance and rehabilitation.
  - Distribute capital funding between rehabilitation and reconstruction priorities, as funds become available from local, state and federal sources.

- Impose fees at a level sufficient to defray maintenance costs associated with utility cuts and to pay for coordination and monitoring activities.
- Enhance Public Works' enforcement authority by adding meaningful civil and criminal penalties for violations of excavation rules.

### **Set Strategic Priorities**

To ensure rational prioritization and timely maintenance, and to minimize ad hoc or political decisions, the city should:

- Use the pavement management system to produce the baseline priorities for roadwork.
- Allow Public Works to deviate from the baseline priorities when necessary to take advantage of opportunities to coordinate with utilities.
- Require that any other significant deviations from maintenance, rehabilitation and reconstruction priorities occur only in accordance with formalized criteria and with the approval of the City Council.
- Require the City Council to take into account the cost of a proposed deviation, as calculated through the pavement management software.

### **Improve Coordination**

To enhance coordination, the city should pass ordinances to:

- Formally establish the Utility Coordination Council. At a minimum, the ordinance should require monthly meetings; require participation by agency officials who have the necessary expertise and decision-making power; and direct the members to share any project information needed for coordination.
- Impose appropriate moratoria on excavations of newly paved streets.

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## END NOTES

<sup>1</sup> Federal Highway Administration, “Pavement Management Primer,” [www.fhwa.dot.gov](http://www.fhwa.dot.gov), p. 1.

<sup>2</sup> Boston Metropolitan Area Planning Council, “Pavement Management: A Manual for Communities,” 1986, pp. 11-13.

<sup>3</sup> Ibid, pp. 14-15. A condition survey can include more categories to refine results.

<sup>4</sup> Categories for ride quality range from minimal vehicle vibration (and no need to reduce speed) to excessive vibrations (which lead to discomfort, the need to slow the vehicle significantly and possibly safety hazards). See Shahin, M.Y., *Pavement Management for Airports, Roads and Parking Lots*, Springer 2005, p. 352. Types of distress include “alligator” cracking, rutting and surface wear. For examples of the variety of ways in which distress appears, see the Central Massachusetts Regional Planning Commission’s “Pavement Management Field Guide to Road Surface Distresses,” prepared in conjunction with Central Massachusetts Metropolitan Planning Organization Transportation Management Systems Programs, June 2006.

<sup>5</sup> The Salt Lake City Department of Public Works collects data in two ways. Every five years, the department contracts out a system-wide assessment while every year department employees perform walking surveys of one-seventh of the system.

<sup>6</sup> Numerous programs exist. Each of the cities BGR surveyed on pavement management used a different one. Baton Rouge uses the Deighton Total Infrastructure Management System; Gainesville uses MicroPaver; Salt Lake City uses Cartagraph Pavement View; and San Francisco uses StreetSaver. Vancouver is in the process of switching to Hansen. Portland is in the process of switching to Aim for Roads.

<sup>7</sup> One study examining the impact of buses in Los Angeles pegged additional annual costs associated with bus lines at \$800 per lane mile per year. (Shahin, p. 278.) Currently, RTA bus routes cover roughly 479 miles, which under that formulation would require approximately \$400,000 in extra annual costs. This figure does not even account for damage from non-public buses. Nor does it account for the extra costs associated with manhole adjustment or raising curbs or gutters to accommodate a thicker overlay.

<sup>8</sup> Shahin, p. 323.

<sup>9</sup> Ibid, p. 322.

<sup>10</sup> New Orleans’ Department of Public Works estimates it would cost about \$100,000 to customize and install the software.

<sup>11</sup> Based on information from other cities, BGR estimates that a trained engineer can survey between 150 and 200 miles of road per year. At this rate, given New Orleans’ mileage, three engineers should be sufficient to collect data in New Orleans. The city would have to hire, train and equip three engineers at a starting salary of \$50,000 to \$60,000 per year plus benefits. Other cost considerations, such as city-owned vehicles and hand-held computers, would push the cost up near the level of outsourcing, approximately \$300,000 per year.

<sup>12</sup> It could also approach the problem through its Master Plan. For example, the transportation element in the master plan for Arcata, Calif., requires that the Pavement Management System “shall be maintained to identify and prioritize street maintenance projects in the City’s Capital Improvement Program (CIP).” Arcata General Plan: 2020, Ch. 2.3 Transportation Element, Sec. 2:7 Policies, T-4h Street maintenance.

<sup>13</sup> Taking a step in this direction, the New Orleans Department of Public Works recently launched two new interactive web sites providing information on FEMA-eligible repairs throughout the city.

<sup>14</sup> To enhance coordination and communication, the state established Louisiana One Call, which allows a utility to simultaneously notify all other participating utilities of excavation work. The SWB, however, does not participate, citing cost concerns. Because the SWB does not participate, utilities must notify the SWB of excavations separately.

<sup>15</sup> In that case, the utility must give Public Works notice within 48 hours after beginning any work.

<sup>16</sup> Public Works used to have two employees devoted to such field inspections; their jobs were eliminated after the disaster of 2005.

<sup>17</sup> New Orleans does not have data on lane miles. Therefore, all mileage counts given are in linear, or “centerline,” miles.

<sup>18</sup> Parking enforcement currently generates far more for the general fund than it costs. The Department of Public Works projects it will generate \$17.4 million this year.

<sup>19</sup> Baton Rouge Department of Public Works.

<sup>20</sup> Includes costs of subsurface infrastructure.

<sup>21</sup> The number rises to \$3.7 million when drainage costs are included.

<sup>22</sup> Includes \$1.5 million for the initial condition survey and \$100,000 for software.

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