REVISING THE TxDOT UNIFIED TRANSPORTATION PROGRAM

CATEGORY 1: PREVENTIVE MAINTENANCE AND REHABILITATION

RECOMMENDATIONS REPORT

October 2002

Submitted for Review to
TxDOT Executive Management
and the
Texas Transportation Commission

Prepared by
Texas Transportation Institute

In Cooperation with the
Texas Department of Transportation

and the
Association of Texas Metropolitan Planning Organizations

EXECUTIVE SUMMARY

A statewide panel of experts from among the Texas Department of Transportation (TxDOT) and selected metropolitan planning organizations, regional planning organizations, and councils of government were invited. Representatives from these agencies convened several meetings during Summer 2002 in Austin, Texas to review, discuss, deliberate, and develop funding allocation formulas for the statewide distribution of Category 1 Preventive Maintenance and Rehabilitation funds. Their recommended funding allocation consensus was for separate funding distribution formulas for preventive maintenance and rehabilitation activities. These formulas are presented below.

Preventive Maintenance

53%	On-System Lane-Miles
5%	Vehicle Miles Traveled per Lane-Mile
40%	3-Year Average Lane-Miles with Pavement Distress Scores between 70 and 89
2%	Square Footage of On-System Span Bridge Deck Area

Rehabilitation

15%	Interstate Highway Equivalent Single Axle Loads (ESALs)
10%	Non-Interstate Highway National Highway System (NHS) ESALs
5%	Non-NHS ESALs
15%	On-System Lane-Miles
5%	On-System Vehicle Miles Traveled
35%	3-Year Average Lane Miles with Pavement Distress Scores less than 60
5%	3-Year Average Lane Miles with Pavement Ride Scores less than 2.0
5%	On-System Bridge Deck Area with Sufficiency Rating between 50 and 80
2%	Centerline-Miles of Operational Intelligent Transportation Systems (ITS)
3%	Centerline-Miles of 2-Lane Highways with Average Daily Traffic Greater than 400 and Substandard Surface Width (Less than 22 Feet)

THE DEVELOPMENT PROCESS

The members of this workgroup were selected from across the state. Representatives from TxDOT Districts and Divisions, as well as representatives of metropolitan planning organizations, regional planning organizations, and councils of government were invited to participate in the workgroups. Only only one workgroup member represented each District, and a few Districts were not represented. A listing of workgroup members and the agency they represented is shown below:

Mr. John Ruiz, Jr.
Director
Planning & Operations Division
Middle Rio Grande Development Council

Mr. Bob Dickinson
Director
Transportation and Environmental Resources
South East Texas Regional Planning Commission

Mr. Glen R. Sullivan
Director of Public Works
Nueces County
(Corpus Christi MPO)

Mr. Albert J. Aldana, P.E.
Project Manager/ Hidalgo Co. MPO
Tech. Committee Rep.
TEDSI Infrastructure Group/Hidalgo Co. MPO

Ms. Mary M. Owen
Tyler District Engineer
Texas Department of Transportation
(representing the Longview MPO on the task force)

Mr. Robert Cox
MPO Director
Midland - Odessa MPO

Ms. E'Lisa Smetana
MPO Director
San Angelo MPO

Mr. Kenneth R. Petr, P.E.
Director of Transportation Planning & Development
Amarillo District
Texas Department of Transportation

Mr. William T. Crumley
Director of Transportation Planning & Development
Brownwood District
Texas Department of Transportation

Mr. Gary D. Charlton, P.E.
Director of Maintenance
Dallas District
Texas Department of Transportation

Mr. Leo Betancourt
District Advance Project Development Engineer
El Paso District
Texas Department of Transportation

Ms. Melisa D. Montemayor
District Transportation Administrator
Laredo District
Transportation Planning and Development
Texas Department of Transportation

Mr. Dennis R. Cooley
District Engineer
Lufkin District
Texas Department of Transportation

Ms. Judy Friesenhahn, PE
Advance Project Development Engineer
San Antonio District
Texas Department of Transportation

Mr. Richard J. Skopik
District Engineer
Waco District
Texas Department of Transportation

Mr. Joe H. Nelson III, P.E.
District Engineer
Wichita Falls District
Texas Department of Transportation

Mr. Joe Graff
Director of Maintenance Section
Maintenance Division
Texas Department of Transportation

Ms. Margaret A. Moore, P.E.
Engineer of Field Coordination
Traffic Operations Division
Texas Department of Transportation

Mr. Mark A. Marek
Director, Roadway Design Section
Design Division
Texas Department of Transportation

Mr. Howard Lyons
Programming and Scheduling Section
TPP Division
Texas Department of Transportation

A charge was developed for the workgroup prior to their first meeting by the Texas Department of Transportation in consultation with the Texas Transportation Institute. This charge was to:

Review the funding distribution formulae for the current preventive maintenance and rehabilitation funding categories:

Interstate Maintenance (old Category 2),
NHS Rehabilitation (old Category 3C),
STP Rehabilitation in Urban and Rural Areas (old Category 4F),
State Preventative Maintenance (old Category 7),
Rehabilitation of Texas Farm to Market Roads (old Category 8A),
Traffic Control Devices (old Category 10A),
Rehabilitation of Traffic Management Systems (old Category 10B), and
State Rehabilitation (old Category 14);

Develop consensus for a new fair and equitable statewide formula(e) to meet Districts' preventive maintenance and rehabilitation needs within the available statewide funding limits;

Prepare a report with recommendations for the Texas Transportation Commission regarding new preventive maintenance and rehabilitation funding distribution formula(e).

NOTE: See Appendix A for previous allocation formulas related to the old categories

The workgroup met for discussion and deliberation on three separate occasions, each over a two-day period. Meetings were held at the Thompson Conference Center located on the University of Texas at Austin campus. Texas Transportation Institute (TTI) staff facilitated all meetings. TTI staff prepared final meeting notes and transmitted them to the workgroup for their review and comment after each meeting. The meeting dates were May 21-22, June 20-21, and August 1-2, 2002. An attendance summary is provided in Appendix B

The first meeting on May 21-22, 2002 brought the workgroup participants together to review their charge and begin work. TxDOT staff made several technical presentations related to the old funding categories and support data for those categories. A summary of the notes from this meeting are provided in Appendix C. The first meeting produced a set of initial criteria for further discussion and refinement:

- Pavement Structure
    - *Average Pavement Management Information System (PMIS) distress score*
        - *Rolling time period*? 2-3 years
        - *Greater detail?* Failure, rutting, cracking
    - *Some form of pavement condition rating*
- Bridge Structure
- Road Inventory
    - *Lane Miles*
- Time cycle/action cycle
- Cost factor/index
- Traffic
    - *Vehicle Miles Traveled (VMT)*
    - *What's really out there?*
    - *Annual Average Daily Truck Traffic (AADTT)*
    - *Average Daily Traffic (ADT)*
    - *Truck vehicles per lane*
    - *Vehicles per lane*
    - *Equivalent Single Axle Loads (ESALs)*
- Environmental factors
    - *Rainfall*
    - *Soil conditions*
    - *Freeze thaw*
- Demographics
    - *Population*
    - *Population changes (Dept. of the Census)*
    - *Change in water connections*
- ITS
    - *Control centers (interim/full)*
    - *Centerline miles covered*
    - *Percent urban freeway system covered*
- Financial Management
    - *Discounting of declining distress/sufficiency scores over time period*

These general criteria were refined into the following set of considered criteria:

Preventive Maintenance	
ID	**Criteria**
A	Lane miles on the State Highway System
B	Vehicle miles traveled per lane mile
C-1	Lane miles in "substandard" condition based on PMIS Distress Score between 70 and 89
C-2	Lane miles in "substandard" condition based on PMIS Distress Score between 65 and 85
C-3	Lane miles in "substandard" condition based on PMIS Condition Score between 70 and 89
C-4	Lane miles in "substandard" condition based on PMIS Condition Score between 60 and 79
C-5	Lane miles in "substandard" condition based on PMIS Ride Score between 3.0 and 3.9
C-6	Lane miles in "substandard" condition based on PMIS Ride Score between 2.5 and 3.5
D	Square footage of span bridge deck area
E	Ratio of lane miles greater than 10,000 ADT to total lane miles
F	Lane miles less than 10,000 ADT divided by cycle periods (5, 6, 7, years) (seal coat) AND 5 times lane miles greater than or equal to 10,000 ADT divided by cycle periods (8 years) (overlay).
G	12-month rolling average regional cost index supplied by CST *[This is a multiplier]*
Rehabilitation	
ID	**Criteria**
A	Summation of flexible and rigid equivalent single axle loads per Interstate section multiplied times the Interstate section length (Interstate ESAL-miles)
B	Summation of flexible and rigid equivalent single axle loads per non-Interstate NHS section multiplied times the Non-Interstate NHS section length (Non-Interstate NHS ESAL-miles)
C	Summation of flexible and rigid equivalent single axle loads per non-Interstate non-NHS section multiplied times the Non-Interstate Non-NHS section length (Non-Interstate Non-NHS ESAL-miles)
D	Interstate lane miles
E	Non-Interstate NHS lane miles
F	Non-Interstate Non NHS lane miles
G-1	Lane miles in "substandard" condition based on PMIS Distress Score less than 70
G-2	Lane miles in "substandard" condition based on PMIS Distress Score less than 60
G-3	Lane miles in "substandard" condition based on PMIS Ride Score less than 3.0
G-4	Lane miles in "substandard" condition based on PMIS Ride Score less than 2.0
H	Square footage of bridge deck area with sufficiency rating between 50 and 80
I	Vehicle miles of travel
J	Operational ITS centerline miles
K	Centerline miles of two lane highways of less than 22 foot surface width

A considerable effort was directed at defining and producing statewide maps for Preventive Maintenance Criteria F and G. The meeting notes contain maps that were considered by the workgroup during their discussions.

The second meeting on June 20-21, 2002 continued discussions from the previous meeting. Data were reviewed and various combinations of criteria were examined. A summary of the notes

from this meeting is provided in Appendix D. The second meeting focused primarily on rehabilitation criteria. At the conclusion of this meeting the following criteria were modified or added to the original rehabilitation criteria list, and associated data requested for reviewing allocation impacts:

Changes to Rehabilitation Criteria		
ID	**Criteria**	
D	Interstate lane miles	On-System Lane Miles
E	Non-Interstate NHS lane miles	
F	Non-Interstate Non NHS lane miles	
G-5	Lane miles in "substandard" condition based on PMIS Distress Score less than 70 and equal to or greater than 61	
G-6	Lane miles in "substandard" condition based on PMIS Ride Score less than 3.0 and equal to or greater than 2.1	
G-7	Lane miles in "substandard" condition based on PMIS Distress Score less than 65	
G-8	Lane miles in "substandard" condition based on PMIS Ride Score less than 2.5	

The final meeting held on August 1-2, 2002 completed the primary work for the workgroup. Consensus was gained on funding distribution formula criteria and weightings. A summary of the notes from this meeting is provided in Appendix E. The workgroup reached consensus at this meeting on both the criteria and weightings for preventive maintenance and rehabilitation. This consensus is presented as formal recommendations from the workgroup in the section that follow.

RECOMMENDATION

Overview

The workgroup developed two separate funding distribution formulas for preventive maintenance and rehabilitation activities. These formulas are presented below.

Preventive Maintenance

53% On-System Lane-Miles
5% Vehicle Miles Traveled per Lane-Mile
40% 3-Year Average Lane-Miles with Pavement Distress Scores between 70 and 89
2% Square Footage of On-System Span Bridge Deck Area

Rehabilitation

15%	Interstate Highway Equivalent Single Axle Loads (ESALs)
10%	Non-Interstate Highway National Highway System (NHS) ESALs
5%	Non-NHS ESALs
15%	On-System Lane-Miles
5%	On-System Vehicle Miles Traveled
35%	3-Year Average Lane Miles with Pavement Distress Scores less than 60
5%	3-Year Average Lane Miles with Pavement Ride Scores less than 2.0
5%	On-System Bridge Deck Area with Sufficiency Rating between 50 and 80
2%	Centerline-Miles of Operational Intelligent Transportation Systems (ITS)
3%	Centerline-Miles of 2-Lane Highways with Average Daily Traffic Greater than 400 and Substandard Surface Width (Less than 22 Feet)

Explanation of Criteria and Weightings

Preventive Maintenance

53% On-System Lane-Miles

This criterion is the most indicative of basic preventive maintenance needs regardless of pavement conditions.

5% Vehicle Miles Traveled per Lane-Mile

The *Vehicle Miles Traveled per Lane-Mile* criterion is an indicator of system use or activity normalized by system size. Vehicle activity on roadways requires that pavement markings and traffic control devices be properly maintained to ensure public safety.

40% 3-Year Average Lane-Miles with Pavement Distress Scores between 70 and 89

This criterion emphasizes roadways requiring preventive maintenance on the pavement structure. Three years of pavement scoring data provides an indication of general trends within a District and reduces potential funding swings from the effects of single good or bad years of pavement scores.

2% Square Footage of On-System Span Bridge Deck Area

This criterion retains emphasis from previous funding distributions and conveys the importance of performing basic and routine preventive maintenance actions on bridge structures. These actions include cleaning joints and caps. No sufficiency rating was noted because the basic and routine preventive maintenance actions are not initiated or performed as a result of a poor score, but rather should be initiated and performed on a routine basis.

Rehabilitation

15% Interstate Highway Equivalent Single Axle Loads (ESALs)
10% Non-Interstate Highway National Highway System (NHS) ESALs
5% Non-NHS ESALs

These three criteria (total to a 30% weighting) represent the cause for pavement damage in terms of wear from passing vehicles and the subsequent rehabilitation actions needed to repair the pavement. An equivalent single axle load is a unit of pavement damage equivalent to the damage inflicted by a single axle weighing 18,000 lbs. Heavy-duty trucks inflict pavement damage significantly more than damage inflicted by passenger vehicles (The pavement damage from a fully loaded [80,000 lbs] 18-wheeler is roughly equivalent to the pavement damage inflicted by approximately 9,600 passenger vehicles).

A greater emphasis or weighting is placed on the Interstate Highway system. The Interstate Highway system is the "crown jewel" of America's transportation system and is vitally important to both national defense and inter- and intrastate commerce. Decreasing emphasis or weightings are made on non-Interstate Highway NHS and non-NHS roadways; this is also reflective of the system's national priority.

15% On-System Lane-Miles

This criterion is indicative of basic rehabilitation needs regardless of pavement or other system component conditions, which would indicate a greater need.

5% On-System Vehicle Miles Traveled

The *On-System Vehicle Miles Traveled* criterion is an indicator of system use or activity. Vehicle activity on roadways requires that pavement markings and traffic control devices be properly maintained to ensure public safety.

35% 3-Year Average Lane Miles with Pavement Distress Scores less than 60
5% 3-Year Average Lane Miles with Pavement Ride Scores less than 2.0

These criteria provide an emphasis (total weighting of 40%) for roadways requiring rehabilitative actions on the pavement structure. Three years of pavement scoring data reduces the effects of single good or bad years of pavement scores and provides an indication of general trends within a District. Pavement Distress Scores are most indicative of actual pavement conditions and are subject to less interference from external factors as other pavement score types. Ride Score is important so that TxDOT Administrative Initiatives are met. The much lower emphasis on the Ride Score versus the Distress Score reflects the confidence in actual representation of pavement condition given that many external factors may affect a pavement's Ride Score. These criteria represent the actual "effect from the cause" for rehabilitation needs.

5% On-System Bridge Deck Area with Sufficiency Rating between 50 and 80

This criterion retains some emphasis from previous funding distributions and also conveys the importance of performing rehabilitation actions on bridge structures.

2% Centerline-Miles of Operational Intelligent Transportation System (ITS)

This criterion retains emphasis from previous funding distributions and conveys the importance of performing continuing rehabilitation actions on ITS components to ensure their proper function and to maintain their reliability.

3% Centerline-Miles of 2-Lane Highways with Average Daily Traffic Greater than 400 and Substandard Surface Width (Less than 22 Feet)

This criterion provides a new emphasis for improving general public safety through widening the pavement structure of substandard two-lane highways with sufficient traffic volumes. This criterion meets the intent of a previous TxDOT Administrative Initiative.

Example of Category 1 Distribution with Recommended Formula

Based on currently available traffic, pavement, and system data compiled for each criterion and used by the workgroup as they analyzed various criteria and weighting scenarios, Table 1 provides a percentage distribution for the Districts under the recommended formula.

CLOSING COMMENTS

Pavement evaluation data is heavily weighted within the preventive maintenance and rehabilitation allocation formulas, 40% in each formula. Because of its importance within the recommended allocation formulas, the workgroup recommends that the pavement data collection and reporting remain consistent from year to year. It is recommended the current 100% sampling be continued until the Department has established a significant confidence with the data. In addition, the new automated data collection procedure proposed for implementation in 2005 is expected to eliminate concerns with evaluator subjectivity and data variability. Finally, the workgroup recommends that data collection errors be addressed at the Division level prior to the publication of final pavement scoring results and subsequent use within formula distribution.

The workgroup attempted to use a Regional Cost Index in its formulas. The purpose of this factor was to adjust scores higher or lower depending on the relative cost of materials, labor, and traffic control within a collective region of the state. After lengthy discussion and considerable review, the workgroup strongly supported the concept of applying a Regional Cost Index to the formulas but decided that currently available data, research, and methods were not developed sufficiently to formulate an acceptable Regional Cost Index. The workgroup recommends that efforts be directed toward developing a Regional Cost Index for future funding allocation applications.

APPENDICES

A – Previous Funding Allocation Formulas
B – Workgroup Meeting Attendance
C – Meeting 1 Notes
D – Meeting 2 Notes
E – Meeting 3 Notes

Table 1. Example of Percentage Distribution by District under Recommended Formula

		Percent Distribution	
District Name		Preventive Maintenance	Rehabilitation
1	PARIS	3.61%	3.50%
2	FORT WORTH	4.34%	5.11%
3	WICHITA FALLS	3.14%	2.21%
4	AMARILLO	5.49%	5.40%
5	LUBBOCK	6.11%	5.69%
6	ODESSA	3.07%	2.08%
7	SAN ANGELO	3.36%	2.62%
8	ABILENE	3.72%	2.45%
9	WACO	4.00%	3.38%
10	TYLER	5.12%	3.47%
11	LUFKIN	3.22%	3.31%
12	HOUSTON	6.32%	9.81%
13	YOAKUM	4.58%	3.56%
14	AUSTIN	4.69%	4.03%
15	SAN ANTONIO	5.69%	5.67%
16	CORPUS CHRISTI	3.52%	3.83%
17	BRYAN	3.23%	3.90%
18	DALLAS	6.30%	12.11%
19	ATLANTA	3.28%	2.49%
20	BEAUMONT	2.95%	4.53%
21	PHARR	2.51%	2.25%
22	LAREDO	2.53%	2.41%
23	BROWNWOOD	3.16%	1.32%
24	EL PASO	3.07%	3.47%
25	CHILDRESS	3.01%	1.39%
		100.00%	100.00%

Appendix A
Previous Funding Allocation Formulas

Category 2: Interstate Maintenance (last revised 1998 UTP)

- 45% Summation of flexible and rigid equivalent single axle loads per Interstate Highway section multiplied times the Interstate Highway section length.
- 10% Interstate lane miles (main lanes only).
- 45% Interstate lane miles (main lanes only) having substandard distress scores, based on PMIS Distress Score less than 40.

Category 3C: National Highway System (NHS) Rehabilitation (last revised 1999 UTP)

- 30% Summation of flexible and rigid equivalent single axle loads per non-Interstate NHS section multiplied times the NHS section length.
- 30% Non-Interstate NHS lane miles.
- 35% Non-Interstate NHS lane miles (including Interstate frontage roads) with "substandard" PMIS Distress Score less than 60.
- 5% Non-Interstate NHS square footage of bridge deck area with sufficiency rating between 50 and 80.

Category 4F: Surface Transportation Program (STP) Rehabilitation in Urban and Rural Areas (last revised 1999 UTP)

- 30% Summation of flexible and rigid equivalent single axle loads per non-Interstate section multiplied times the non-Interstate section length.
- 30% Non-Interstate lane miles.
- 35% Non-Interstate lane miles (including Interstate frontage roads) with "substandard" PMIS Distress Score less than 60.
- 5% Square footage of bridge deck area with sufficiency rating between 50 and 80.

Category 7: State Preventative Maintenance (last revised 1999 UTP)

- 80% Lane miles on the State Highway System.
- 10% Vehicle miles traveled per lane mile.
- 10% Lane miles in "substandard" condition based on PMIS Distress Score between 70 and 89.

Category 8A: Rehabilitation of Farm to Market (FM) Roads (last revised 1999 UTP)

- 30% Summation of flexible and rigid equivalent single axle loads per FM section multiplied times the FM section length.
- 30% FM lane miles.
- 35% FM lane miles with "substandard" Distress Scores based on PMIS Distress Score less than 60.
- 5% Square footage of bridge deck area with sufficiency rating between 50 and 80.

Category 10A: Traffic Control Devices (last revised 1996 UTP)

- 50% District percentage of total state non-Interstate lane miles.
- 50% District percentage of total state population.

Category 10B: Rehabilitation of Traffic Management Systems (last revised 1997 UTP)

- Sophistication of equipment installed
- Type of control center
- Miles of system under control.

Category 14: State Rehabilitation (last revised 1999 UTP)

- 30% Summation of flexible and rigid equivalent single axle loads per non-Interstate section multiplied times non-Interstate section length.
- 30% Non-Interstate lane miles.
- 35% Non-Interstate lane miles (including Interstate frontage roads) with "substandard" PMIS Distress Score less than 60.
- 5% Square footage of bridge deck area with sufficiency rating between 50 and 80.

Appendix B
Workgroup Meeting Attendance

Mid Rio Grande Devel Council	Johnny Ruiz, Jr. Dir., Planning & Operations	✓		
Beaumont = South East Texas Regional Planning Commission	Bob Dickinson MPO Director	✓		
Corpus Christi MPO	Glen Sullivan Nueces County Engineer	✓		
Hidalgo County MPO McAllen-Pharr	Albert Aldana Tech. Committee Rep.	✓		
Longview MPO	Mary Owen TxDOT District Engineer	✓	✓	✓
Midland - Odessa MPO	Robert Cox MPO Director			
San Angelo MPO	E'Lisa Smetana MPO Director	✓	✓	✓
TxDOT Amarillo District	Kenneth Petr Director, TPD	✓	✓	✓
TxDOT Brownwood District	William T. Crumley Director, TPD	✓	✓	✓
TxDOT Dallas District	Gary D. Charlton Director, Maintenance	✓	✓	✓
TxDOT El Paso District	Leo Betancourt Adv. Proj. Dev. Engr.	✓	✓	✓
TxDOT Laredo District	Mellissa Montemayor Director, TPD	✓	✓	✓
TxDOT Lufkin District	Dennis R. Cooley District Engineer	✓	✓	✓
TxDOT San Antonio District	Judy Freisenhahn Adv. Proj. Dev. Engr.	✓	✓	✓
TxDOT Waco Distict	Richard Skopik District Engineer	✓	✓	✓
TxDOT Wichita Falls District	Joe Nelson District Engineer	✓	✓	✓
TxDOT Maintenance Division	Joe Graff Director, Mainteance Section	✓	✓	✓
TxDOT Traffic Operations Division	Meg Moore Engineer of Field Coordination	✓	✓	✓
TxDOT Design Division	Mark Marek Director, Roadway Design Section	✓	✓	✓
	Alternate Linda Olson	✓		
TxDOT TP&P Programming and Scheduling	Howard Lyons	✓	✓	✓

Appendix C
Workshop #1 Meeting Notes

TxDOT UTP Restructuring
Category 1, Workshop #1
May 21-22, 2002

Notes

Statements reported in these notes are not direct quotes, but reflect the general idea of the questions or comments made by each individual. Statements are not in exact chronological order as they occurred during the meeting. They have been arranged in order according to the topics that were discussed.

The first meeting of the Preventive Maintenance and Rehabilitation Work Group was held May 20-21, 2002. Jason Crawford, TTI, moderated the group. Following the introductions, Jim Randall, TxDOT TPP, welcomed everyone. Next, Jason Crawford then reviewed the group's notebook and charge. He also reviewed the ground rules for the meeting.

Expert Presentations

Several people made presentations on various topics pertinent to the work group. Max Proctor, TxDOT TPP, spoke about the UTP revision activity and how this work group fits into that process. Judy Friesenhahn, TxDOT SAT, asked who decides the amount of funding for each of the categories. Max responded that the Texas Transportation Commission decides that.

Howard Lyons, TxDOT TPP, discussed a broad perspective of programming. Joe Graff, TxDOT MNT, asked how this relates to maintenance. Max Proctor, TxDOT TPP, responded that maintenance comprises about 40 percent of the annual budget.

Bryan Stampley, TxDOT CST, discussed several aspects of the Pavement Management Information System (PMIS). Joe Graff reiterated to the work group that the $1.5 B noted in the presentation only addresses the current backlog to meet the Commission's goal, and does not address needs to maintain all other roads at present levels.

Michael O'Toole, TxDOT BRG, presented the Bridge Management System.

Mark Hodges, TxDOT TPP, discussed available traffic data. Dawn Doyle, TxDOT TPP, who discussed future capabilities of the Statwide Traffic Analysis and Reporting System (STARS), followed his presentation. Dennis Cooley, TxDOT LUF, asked how districts could get additional data on truck traffic. Mark Hodges responded that districts should contact TPP for more detailed information. Dennis Cooley, TxDOT LUF, followed up with the availability of ESAL data. Gary Charlton, TxDOT DAL, added that their needs change quickly as development occurs making it difficult to keep up with changing traffic counts and axle weight impacts.

Meg Moore, TxDOT TRF, made the final presentations on traffic management and traffic control devices. Montie Wade, TTI, asked how traffic control devices are funded and if there are problems spending the allocated funding. Meg Moore responded that the funding is 100 percent state funds and that in almost all cases the district allocations are spent.

On the second day, Jason Crawford asked Linda Olsen, TxDOT DES, to share her comments from the previous day regarding funding allocations. She stated that for the next fiscal year, each district would receive a certain allocation for preventive maintenance and rehabilitation. Dennis Cooley, TxDOT LUF, asked if it wouldn't be advantageous to create separate formulas. Linda Olsen clarified her comments stating that preventive maintenance is all state-funded and that each district would be given a specific allocation for their preventive maintenance work. When asked about the total available funding for preventive maintenance, she stated that it was a function of the Commission's proposed levels, derived through the Texas Legislature. Linda further stated that there is some limited carry-over funding.

Workgroup Definitions of Preventive Maintenance and Rehabilitation

The definitions developed by this group are for workgroup purposes only and do not supercede those similar definitions recognized by the Texas Transportation Commission and the Texas Legislature. Consensus results are shown in Attachment #1. Discussions began with the presentation of both definitions taken from TxDOT's On-Line Manual. Both definitions were reviewed at the beginning of day two.

Preventive Maintenance

Howard Lyons indicated that both the District Engineers and the Transportation Commission have covered these definitions. Meg Moore suggested adding operations. Bill Crumley, TxDOT BWD, suggested adding terminology to reflect highway system. Glen Sullivan, Corpus Christi MPO, countered that there are roads on the NHS that may not be on the state highway system; the statement could possibly cause confusion. Gary Charlton, TxDOT DAL, suggested adding operations systems. Dennis Cooley, TxDOT LUF, stated that the bottom line is to preserve and extend the life of something. Joe Graff, TxDOT MNT, stated that if work isn't design or construction, it falls under maintenance. He further stated that maintenance has been a catchall and has been used to support special emphasis programs, such as a major sign replacement project.

Rehabilitation Discussion

Work group suggested adding safety, structural integrity, and operations to the definition.

<u>Review Current Allocation Formulas and Variables</u>

Joe Graff, TxDOT MNT, stated a concern that problems with Condition scores were misleading and unfairly distorted needs. Bryan Stampley, TxDOT CST, responded saying that CST made adjustments to the definitions and corrected the ratings. Howard Lyons, TxDOT TPP, noted another issue is the wide variance of traffic volumes. Bryan Stampley, TxDOT CST, added that some districts had distorted ratings between Distress and Conditions scores.

Workgroup Identification of Additional Allocation Criteria

Through a brainstorming session, the workgroup developed several allocation criteria for consideration, in addition to these currently used for distributing preventive maintenance and

rehabilitation funds. The list of allocation criteria is provided as Attachment #2. A summary of the discussion leading to the development of this list is provided below.

Dennis Cooley, TxDOT LUF, stated that very aggressive preventive maintenance and rehabilitation efforts in a district might actually extend the pavement ratings in the near term. He added that sealcoats are often used to extend the limited money but may be postponing an eventual time bomb. Howard Lyons, TxDOT TPP, stated that the Commission is taking a more statewide approach rather than piecemeal from district to district.

The list was reviewed at the beginning of day two.

Workgroup Draft Allocation Criteria and Investigative Weightings

Attachment #3 provides the list of allocation criteria and initial investigative weightings for both preventive maintenance and rehabilitation. A summary of discussion points leading to the draft list is provided below.

Preventive Maintenance

Jason Crawford, TTI, began the discussion by asking if the past should direct the future or should this group start anew. Gary Charlton, TxDOT DAL, suggested starting with a minimum level for each district, independent of quantifiable criteria and removing any bias between large and small districts and urban and rural districts. Joe Nelson, TxDOT WFS, agreed and suggested giving minimum capabilities for both preventive maintenance and rehabilitation. He further stated that preventive maintenance funds are used for lesser volume roads that are not likely to receive funding from other sources. Richard Skopik, TxDOT WAC, stated that a basic level of funding would allow districts to use the proper maintenance application for their need. He continued that rehabilitating low volume roadways is not necessary when preventive maintenance measures would suffice. Skopik further stated that rarely is there enough rehabilitation funding to address needs on higher volume roadways, resulting in the application of lower cost options such as micro-surfacing. Group members suggested using lane miles, pavement distress scores, bridge deck area, or vehicle miles traveled.

Richard Skopik, TxDOT WAC, stated that, when developing a bridge deck criteria that it should not include culverts, which require very little preventive maintenance. He also stated that the sufficiency rating might be inappropriate. He suggested criteria based on the spanned bridge deck area without regards to sufficiency ratings.

Joe Graff, TxDOT MNT, stated his preference for lane miles, adding that a breakpoint might be needed, such as lane miles less than 10,000 ADT. Gary Charlton, TxDOT DAL, added that lane miles might need to be weighted with a materials cost factor to ensure districts have funding for preventive maintenance and rehabilitation. Richard Skopik, TxDOT WAC, addressed the possible need for differentiating between the types of maintenance. Mary Owen, Longview MPO, suggested using a weighting factor to assure a good mix for rural and urban districts.

Joe Graff, TxDOT MNT, noted that cost indices are available. Regional cost indices could be developed based on a collection of counties. Perhaps IH 35 would be a dividing line. This item was tabled until further information could be distributed to the work group members. Later in the day, Joe Graff was able to bring copies of TxDOT CST's Highway Cost Index (HCI) Twelve Month Index Report for each work group member. Joe Graff's, TxDOT MNT, proposed

regional cost indices are provided in Attachment #4. This attachment includes a table showing how the indices were developed and a map displaying the three cost index regions.

The group gained consensus on removing mention of sufficiency ratings from the bridge deck criteria and also gained consensus that the criteria should not include culverts but only spanned bridges.

Leo Betancourt, TxDOT ELP, asked if PMIS Distress scores would be used as an indicator for rehabilitation. Joe Graff, TxDOT MNT, suggested that there might be a need to split out concrete pavement lane miles after some life period (10 or 15 years) so that newly constructed concrete pavements are excluded from the criteria. Judy Friesenhahn, TxDOT SAT, suggested making the lane miles criteria applicable only to flexible pavements. Dennis Cooley, TxDOT LUF, then suggested the criteria be left at lane miles and not complicate the formula further. The group decided not to separate rigid and flexible pavement lane miles when applying PMIS criteria.

Dennis Cooley, TxDOT LUF, suggested exploring the application of PMIS Distress and PMIS Condition scores. He noted that Condition reflects both the distress and the ride of the road. Gary Charlton, TxDOT DAL, stated that he preferred including both Distress and Condition; Distress improvements are usually made through preventive maintenance and Ride improvements are made through rehabilitation. Richard Skopik, TxDOT WAC, suggested that the Ride score be lowered to Poor-Very Poor. The group gained consensus for adjusting the Ride score range to be 2.5 to 3.5. Group members then suggested that different scenarios be run with varying degrees of scores to see how the criteria affects the funding distribution. Mary Owen, Longview MPO, remarked that the group might be sliding criteria ranges to unrealistic levels for optimum application points. Dennis Cooley, TxDOT LUF, then stated that some scenarios should reflect higher score ranges since many of the PMIS criteria are being lowered through discussion.

Joe Graff, TxDOT MNT, suggested using maintenance cycle periods tied to the lane miles below and above a specified ADT. He stated that the rehabilitation cycle is fairly consistent at 8 years. Preventive maintenance cycles vary across the state from 5 to 7 years and reflect climate and soil differences. Richard Skopik, TxDOT WAC, suggested that some work group members develop the preventive maintenance cycle maps and recommend them to the group. The preventive maintenance cycle map subcommittee was formed with Joe Graff assigned as chair, assisted by Judy Friesenhahn (TxDOT SAT) and Richard Skopik (TxDOT WAC). The subcommittee's recommended map is shown in Attachment #5. Attachment #5 also includes maps of annual rainfall and freeze-thaw cycles, which were used to develop the recommended preventive maintenance cycle map.

The work group spent a considerable amount of time discussing the various weightings for each of the criteria and captured in scenario designations. These discussed weightings will be used to develop funding allocations for quick comparison and also be distributed so work group members can adjust criteria and their weightings for discussion when the group convenes again.

Rehabilitation

The work group agreed to keep ESAL-miles within the allocation criteria. Richard Skopik, TxDOT WAC, initially suggested that ESAL-miles on Interstates be differentiated. Joe Nelson, TxDOT WFS, suggested that we differentiate further into Interstate, non-Interstate NHS, and all others.

Dennis Cooley, TxDOT LUF, stated that the PMIS Distress score should be the main element, but he stated PMIS Condition score should be removed. The work group agreed to this.

Jason Crawford, TTI, noted that preventive maintenance included the PMIS Ride score and questioned if it should be included within rehabilitation. The group agreed that the Ride score is important and should be included. The group wanted to investigate the effects of limiting the Ride score to 3.0 and lower and 2.0 and lower.

The group had no changes to the current bridge criteria used based on deck area and sufficiency rating.

In considering criteria to reflect operational needs, VMT was favored over the use of state lane miles and populations. Mary Owen, Longview MPO, stated that there are other sources and mechanisms for the smaller cost items like pavement markers, but there may still be a need for funding for the larger ticket items. Dennis Cooley, TxDOT LUF, stated that VMT might assure the more urban districts get adequate funding due to the large traffic volumes in those districts. Mary Owen, Longview MPO, noted that bridge desk area and VMT address the urban needs and suggested adding ITS Centerline Miles to accommodate Traffic Management Center needs. The group agreed to use Operational ITS Centerline Miles.

Several group members noted a need to allocate funding for two-lane highways with substandard pavement width. The criteria was added and was clarified to be Centerline miles of two lane highways of less than 22 foot surface width.

The work group spent a considerable amount of time discussing the various weightings for each of the criteria and captured in scenario designations. These discussed weightings will be used to develop funding allocations for quick comparison and also be distributed so work group members can adjust criteria and their weightings for discussion when the group convenes again.

Next Meeting Date and Time

The next meeting dates and times scheduled for the work group were June 20, 8:30 AM – 4:30 PM and June 21, 8:30 AM – Noon at the Thompson Center Room 2.110.

Category 1 Workgroup
Working Definitions

Preventive Maintenance – Preserve the integrity and enhance the safety of the state highway system

Rehabilitation – Add structural integrity, improve serviceability, extend the service life of existing highway and streets, and to enhance safety and operations

Potential Category 1 Allocation Criteria

- 2 Formulas? 3 Formulas?
- Pavement Structure
    - *Average PMIS distress score*
        - *Rolling time period*? 2-3 years
        - *Greater detail?* Failure, rutting, cracking
    - *Some form of pavement condition rating*
- Bridge Structure
- Road Inventory
    - *Lane Miles*
- Time cycle/action cycle
- Cost factor/index
- Traffic
    - *VMT*
    - *What's really out there?*
    - *AADTT*
    - *ADT*
    - *Truck vehicles per lane*
    - *Vehicles per lane*
    - *ESALs*
- Environmental factors
    - *Rainfall*
    - *Soil conditions*
    - *Freeze thaw*
- Demographics
    - *Population*
    - *Population changes (Dept. of the Census)*
    - *Change in water connections*
- ITS
    - *Control centers (interim/full)*
    - *Centerline miles covered*
    - *Percent urban freeway system covered*
- Financial Management
    - *Discounting of declining distress/sufficiency scores over time period*

draft proposed Allocation criteria for
preventive maintenance and rehabilitation

Conclusion of Category 1 Workshop #1
May 21-22, 2002

Preventive Maintenance

ID	Criteria
A	Lane miles on the State Highway System
B	Vehicle miles traveled per lane mile
C-1	Lane miles in "substandard" condition based on PMIS Distress Score between 70 and 89
C-2	Lane miles in "substandard" condition based on PMIS Distress Score between 65 and 85
C-3	Lane miles in "substandard" condition based on PMIS Condition Score between 70 and 89
C-4	Lane miles in "substandard" condition based on PMIS Condition Score between 60 and 79
C-5	Lane miles in "substandard" condition based on PMIS Ride Score between 3.0 and 3.9
C-6	Lane miles in "substandard" condition based on PMIS Ride Score between 2.5 and 3.5
D	Square footage of span bridge deck area
E	Ratio of lane miles greater than 10,000 ADT to total lane miles
F	Lane miles less than 10,000 ADT divided by cycle periods (5, 6, 7, years) (seal coat) AND 5 times lane miles greater or equal to than 10,000 ADT divided by cycle periods (8 years) (overlay).
G	12-month rolling average regional cost index supplied by CST ***[This is a multiplier]***

	Preventive Maintenance Scenario Weighting															
Criteria	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
A	80	70	70	70	70	80	70	70	70	70		75		80		
B	10	15	15	15	15	10	15	15	15	15		10		20		
C-1	10		5			10		5				10	10			100
C-2		5					5									
C-3				10					10							
C-4					10					10						
C-5			5					5								
C-6		5					5									
D		5	5	5	5		5	5	5	5	5	5	5			
E																
F											95		85		100	
G						X	X	X	X	X	X					

Rehabilitation

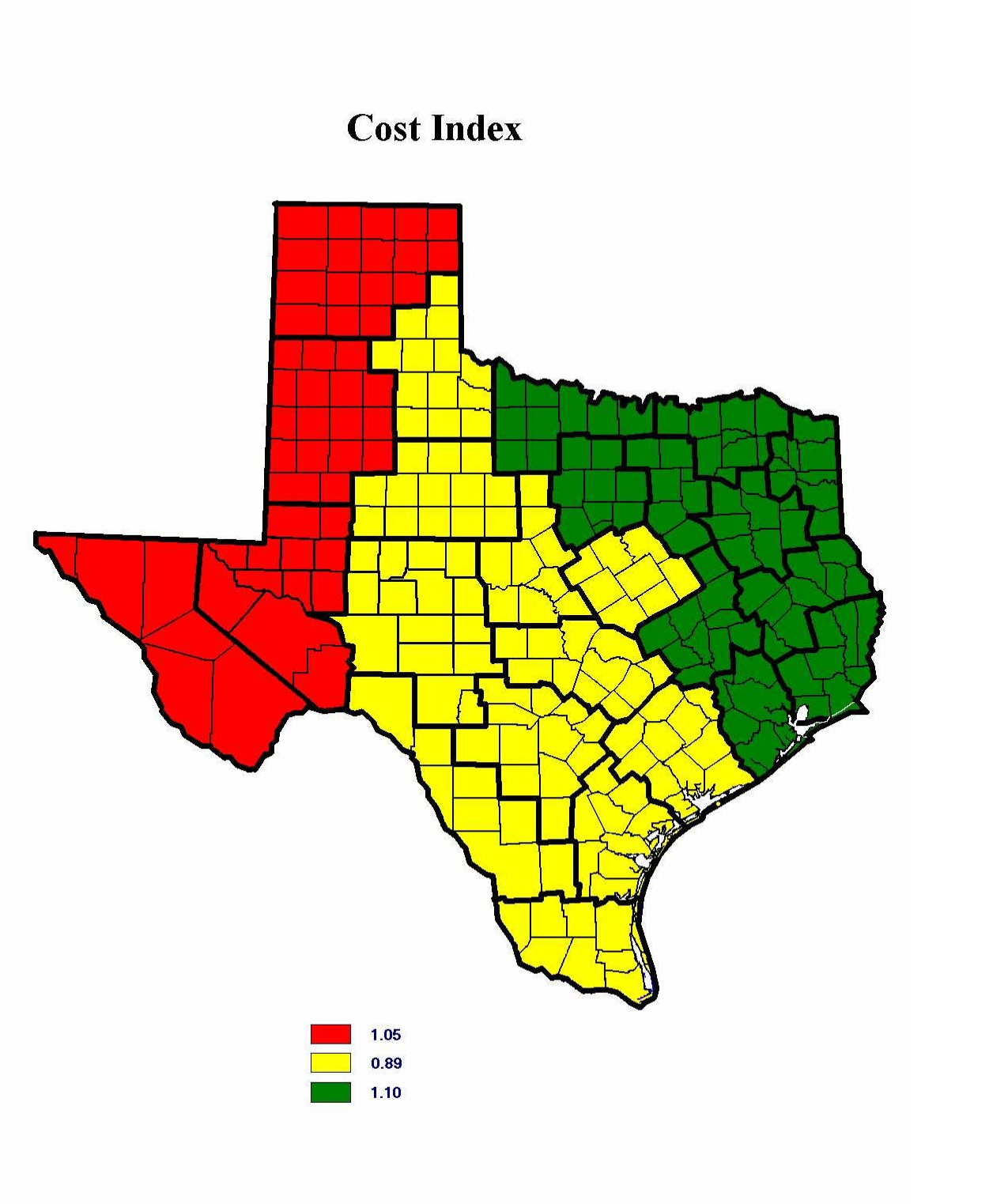
ID	Criteria
A	Summation of flexible and rigid equivalent single axle loads per Interstate section multiplied times the Interstate section length (Interstate ESAL-miles)
B	Summation of flexible and rigid equivalent single axle loads per non-Interstate NHS section multiplied times the Non-Interstate NHS section length (Non-Interstate NHS ESAL-miles)
C	Summation of flexible and rigid equivalent single axle loads per non-Interstate non-NHS section multiplied times the Non-Interstate Non-NHS section length (Non-Interstate Non-NHS ESAL-miles)
D	Interstate lane miles
E	Non-Interstate NHS lane miles
F	Non-Interstate Non NHS lane miles
G-1	Lane miles in "substandard" condition based on PMIS Distress Score less than 70
G-2	Lane miles in "substandard" condition based on PMIS Distress Score less than 60
G-3	Lane miles in "substandard" condition based on PMIS Ride Score less than 3.0
G-4	Lane miles in "substandard" condition based on PMIS Ride Score less than 2.0
H	Square footage of bridge deck area with sufficiency rating between 50 and 80
I	Vehicle miles of travel
J	Operational ITS centerline miles
K	Centerline miles of two lane highways of less than 22 foot surface width

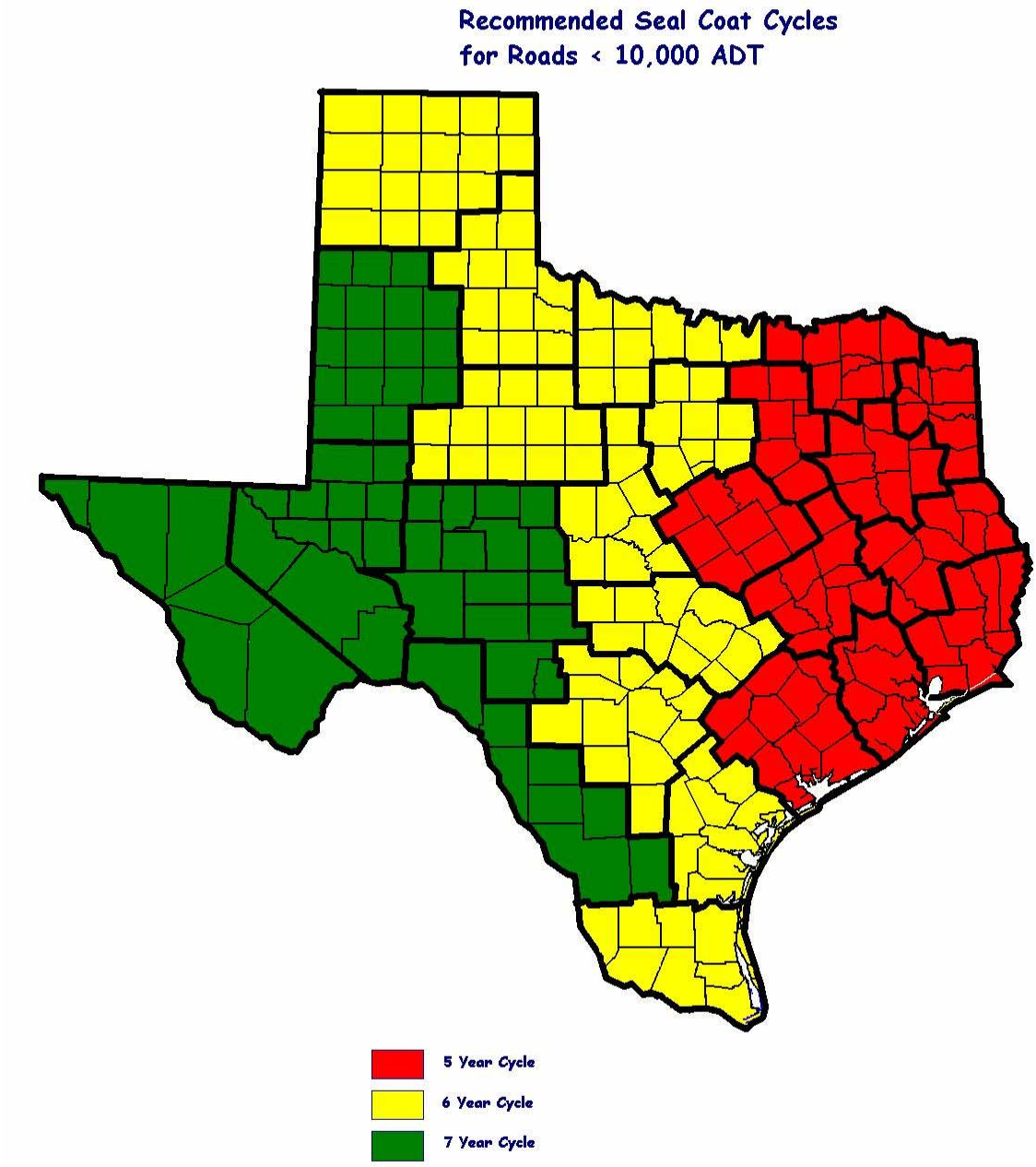
	Rehabilitation Scenario Weighting									
Criteria	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	15	15	15	15	15	15	35	10	15	20
B	10	10	10	10	10	10	25	10	10	10
C	5	5	5	5	5	5	10	10	5	5
D	5	5	5	5	5	5	10	5	15	5
E	5	5	5	5	5	5	10	5	10	5
F	5	5	5	5	5	5	10	5	5	5
G-1	30				15			30	20	30
G-2		30				15				
G-3			30		15					
G-4				30		15				
H	5	5	5	5	5	5		5	5	5
I	5	5	5	5	5	5		5	5	5
J	5	5	5	5	5	5		5	5	5
K	10	10	10	10	10	10		10	5	5

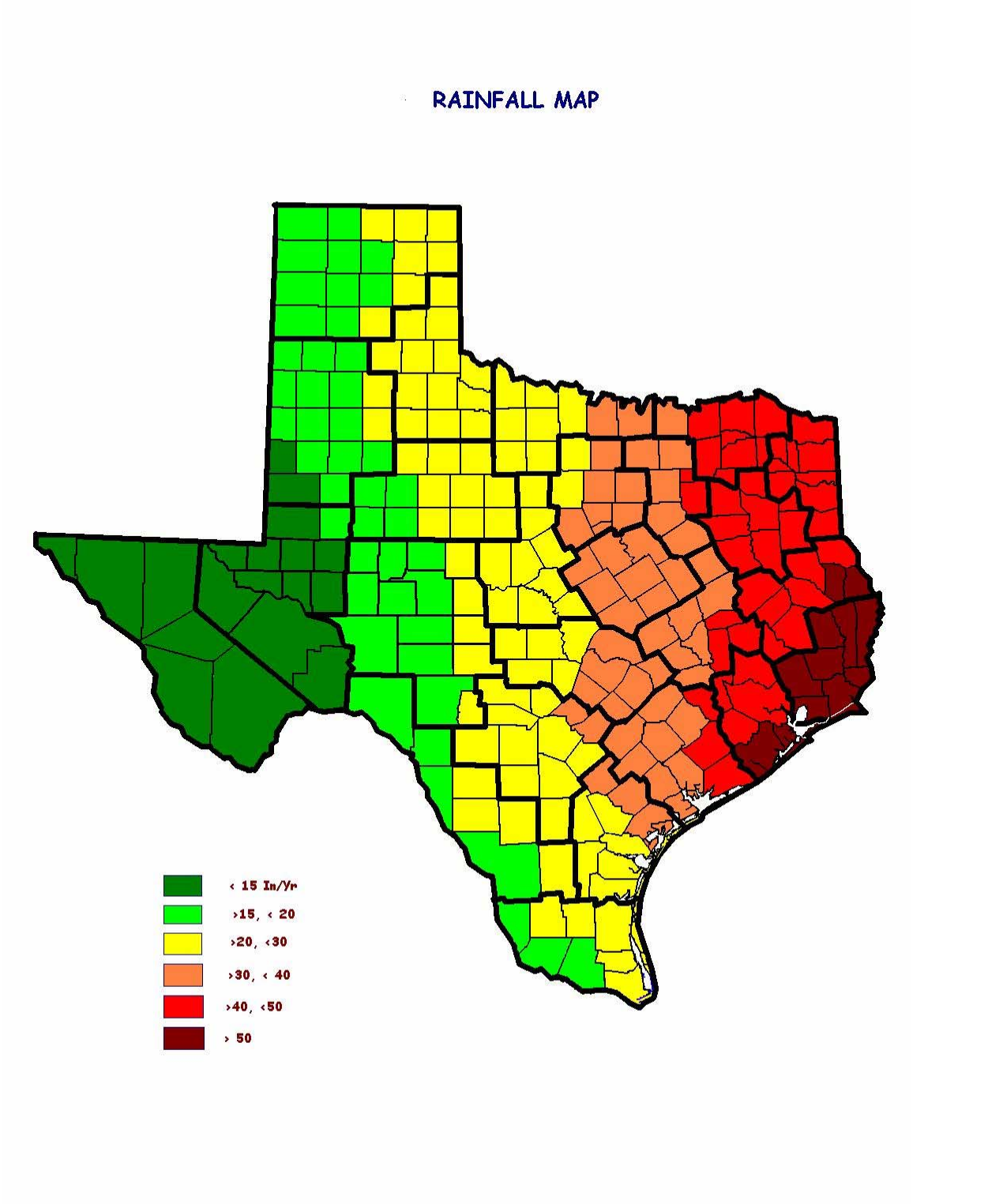
Construction Cost Index

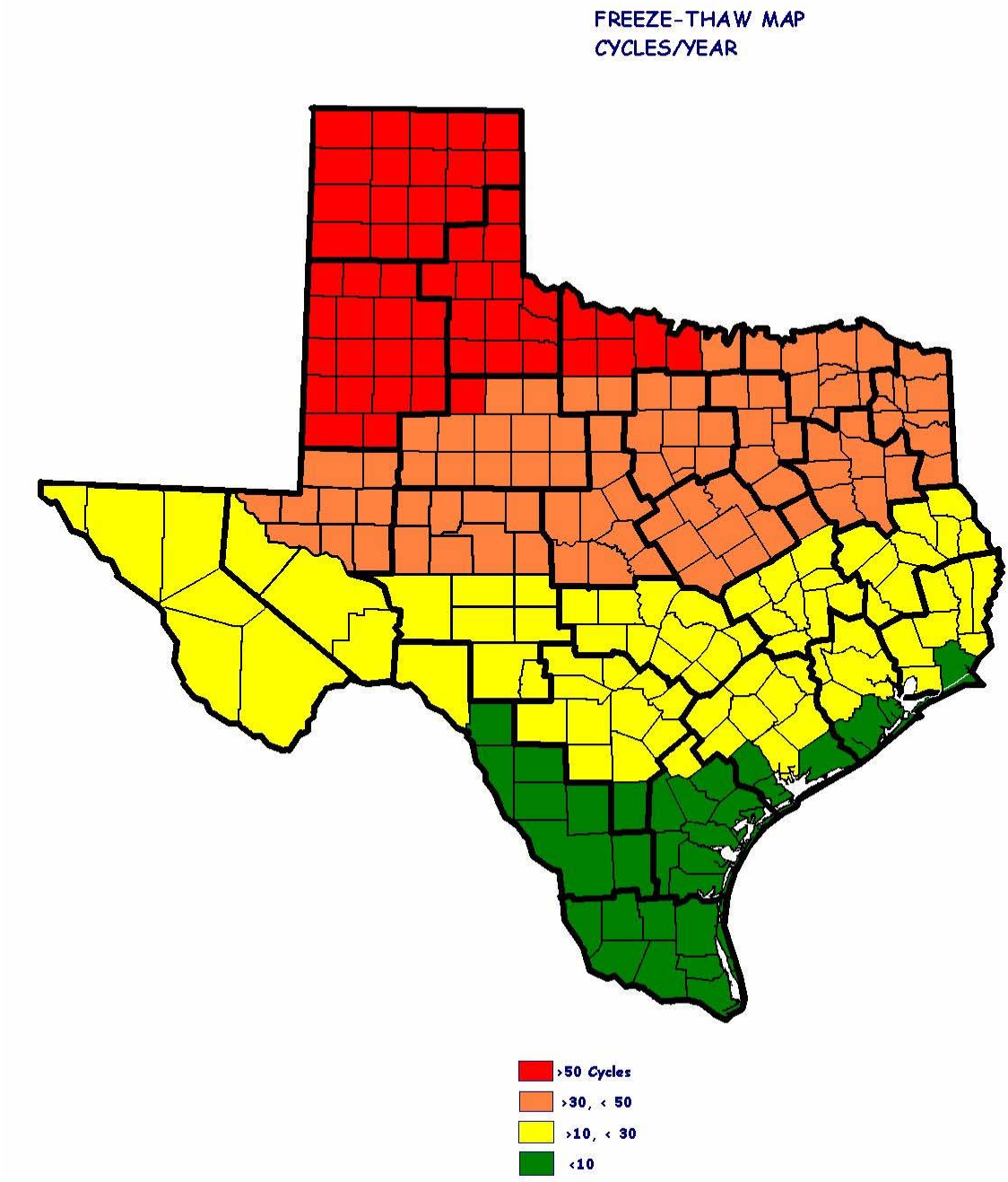
A	B	C	D	E	F	G	H	I	J
District	Region	Base Course Index	Surfacing Index	Combined (C+D)/2	Combined Index	Regional Index	MAY 2002, Overall HCI	MAY 2002, Overall HCI Index	Regional Index
San Angelo	C	77.23	70.55	73.89	0.54	0.77	129.02	0.89	0.89
Brownwood	C	88.61	76.59	82.60	0.61	0.77	114.95	0.79	0.89
Austin	C	99.32	68.09	83.71	0.62	0.77	123.42	0.85	0.89
Waco	C	112.3	65.17	88.74	0.65	0.77	111.70	0.77	0.89
Corpus	C	142.94	69.67	106.31	0.78	0.77	109.93	0.76	0.89
San Antonio	C	155.87	64.2	110.04	0.81	0.77	116.30	0.80	0.89
Childress	C	158.78	77.65	118.22	0.87	0.77	143.00	0.99	0.89
Abilene	C	106.05	134.34	120.20	0.89	0.77	165.20	1.14	0.89
Pharr	C	157.32	83.94	120.63	0.89	0.77	126.14	0.87	0.89
Yoakum	C	174.18	73.05	123.62	0.91	0.77	118.16	0.82	0.89
Laredo	C	84.3	168.46	126.38	0.93	0.77	166.40	1.15	0.89
Paris	E	112.4	148.23	130.32	0.96	1.14	159.93	1.10	1.10
Fort Worth	E	133.24	132.56	132.90	0.98	1.14	142.64	0.98	1.10
Dallas	E	151.7	137.22	144.46	1.07	1.14	154.76	1.07	1.10
Beaumont	E	152.47	145.54	149.01	1.10	1.14	177.20	1.22	1.10
Wichita	E	179.99	121.85	150.92	1.11	1.14	162.59	1.12	1.10
Bryan	E	152.12	157.57	154.85	1.14	1.14	145.64	1.01	1.10
Atlanta	E	155.09	168.33	161.71	1.19	1.14	174.50	1.20	1.10
Houston	E	225.96	111.68	168.82	1.24	1.14	149.80	1.03	1.10
Lufkin	E	213.98	132.87	173.43	1.28	1.14	142.80	0.99	1.10
Tyler	E	215.5	149.28	182.39	1.34	1.14	179.44	1.24	1.10
Odessa	W	122.49	69.83	96.16	0.71	1.27	100.42	0.69	1.05
Lubbock	W	131.81	201.03	166.42	1.23	1.27	124.85	0.86	1.05
El Paso	W	162.42	244.4	203.41	1.50	1.27	186.83	1.29	1.05
Amarillo	W	235.37	208.3	221.84	1.64	1.27	194.77	1.34	1.05
State Ave.		148.06	123.22	135.64	1.00	1.00	144.82	1.00	1.00

Notes:
F = E/Sum(E1..E25)
G = Average(E for Region)
I = H/Sum(H1..H25)
J = Average(I for Region)


Cost Index
1.05
0.89
1.10


Recommended Seal Coat Cycles
for Roads < 10,000 ADT
5 Year Cycle
6 Year Cycle
7 Year Cycle


RAINFALL MAP
< 15 In/Yr
>15, < 20
>20, <30
>30, < 40
>40, <50
> 50


FREEZE-THAW MAP
CYCLES/YEAR
>50 Cycles
>30, < 50
>10, < 30
<10

Appendix D
Workshop #2 Meeting Notes

UTP Restructuring Workshop

Category 1, Workshop 2
Thompson Conference Center
Austin, TX
June 20-21, 2002

Notes

Statements reported in these notes are not direct quotes, but reflect the general idea of the questions or comments made by each individual. Statements are not in exact chronological order as they occurred during the meeting. They have been arranged in order according to the topics that were discussed.

The second meeting of the Preventive Maintenance and Rehabilitation Work Group was held June 20-21, 2002. Jason Crawford, TTI, moderated the group on the first day. Todd Carlson, TTI, moderated on the second day.

Jason Crawford, TTI, made welcoming remarks. New sections in the notebook were handed out. The charge, Workshop 1 notes, and the draft allocation criteria were then reviewed.

Regional Cost Index

Joe Graff, TxDOT MNT, presented a Regional Cost Index as requested by the committee as a variable in a formula. He stated that he tried to combine the figures into regions. In some parts of the state the index is higher. This may be the result of a combination of things: some districts may use better quality materials, travel distance for getting materials, lack of contractors. The index was difficult to categorize by region because of too much disparity in scores within regions. Central Texas fit pretty well, but other regions did not. He stated that although he put it together, he did not really like it. If it was organized district by district, bias will still be created.

Richard Skopik, TxDOT WAC, asked if a 12-month average cost was used and Graff replied affirmatively. He added that the numbers were based on total bid price, not unit bid price, since materials will have an impact on cost. Dennis Cooley, TxDOT LUF, asked where do the miscellaneous costs figure into the score? The index only seems to be looking at a couple of things. Graff stated that HCI chosen to try to take away the fluctuations in bid prices over time. Bill Crumley, TxDOT TPP wondered if perhaps a 3-year average could be looked at? Gary Charlton, TxDOT DAL, responded that the questions would still be the same.

Dennis Cooley, TxDOT LUF, stated that a cost index has merit if the grouping is more precise, perhaps 3 year or 5 year. Graff responded that a longer time period would be better. Mark Marek, TxDOT DESIGN, cautioned that the time periods could be too long sometimes.

Leo Betancourt, TxDOT ELP, stated that materials variations may not be as valid as one thinks, sometimes a district must use better material on a project, whether they think they should or not. Gary Charlton, TxDOT DAL, noted that sometimes you have to use "Cadillac" materials.

Melisa Montemayor, TxDOT LAR, stated that she considers the index unsatisfactory as her area is losing out in the index, would like to see 3 and 5-year data. Jason Crawford, TTI, suggested that a 3 and 5-year index would be worked up and looked at, by perhaps another committee with Joe and 2 or 3 more people. Joe Graff, TxDOT MNT, said he might be able to have it ready the next morning.

During the first day discussions on rehabilitation formulas, several committee members commented on the use of the cost index. Dennis Cooley, TxDOT LUF, suggested that if we have a cost index for Maintenance, then maybe we need one for Rehabilitation, and vice versa. Gary Charlton, TxDOT DAL, asked when would an index be recalculated. Cooley responded that it would be recalculated for every allocation. Howard Lyons, TxDOT TPP, noted that a cost index would be difficult to use for funding, too many questions over the validity of computation of the index would hinder its use.

On the second day, Joe Graff, TxDOT MNT, presented updated Construction Cost Index data. Graff stated that he is still not comfortable with using the index as developed in the new formula. There was further discussion of the cost index by the committee.

The consensus of the committee is that a cost index will not be used in the allocation formula, however they would like it noted in the report that they believe the concept of using one is valid and further study in developing an index is warranted.

Seal Coat Cycles

Joe Graff, TxDOT MNT, presented graphical data on seal coat cycles. Graff noted that the biggest factor appears to be rainfall. Soil types are also important; the soils east of I-35 are generally poorer than those west of the highway.

Scenarios

The committee reviewed and discussed the FY 2002 through FY 2006 funding for Rehabilitation and Preventive Maintenance. Dramatic fluctuations in funding over the years for individual districts were noted with dismay by several committee members.

Jason Crawford, TTI, presented the scenario spreadsheet with figures based on formulas created in the first workshop. Scenario PM-6 was analyzed in detail by the workgroup.

Preventive Maintenance Scenarios

Judy Freisenhahl, TxDOT SAT, expressed support for PM-11, 13, and 15 as they use criteria F to a great extent.

Richard Skopik, TxDOT WAC, and Dennis Cooley, TxDOT LUF, reiterated the need for some sort of pavement score in the formula.

Joe Nelson, TxDOT WF, led discussion over activity vs. distress (criteria F vs. C), stating that it shows the need for fairness in allocations.

Judy Freisenhahl, TxDOT SAT, suggested re-weighting PM-13. The formula was re-weighted and discussed.

Richard Skopik, TxDOT WAC, asked how is the PM money being spent currently in the districts? The workgroup then began a discussion on the topic. Joe Graff, TxDOT MNT, responded 15,000 miles seal coat, 50,000 miles overlay. Gary Charlton, TxDOT DAL, answered seal coat for his district. Skopik further inquired if most of money going to seal coat and it is important to get on cycle, how can the formula be restructured to ameliorate urban bias as a result of the 10,000+ ADT criteria? Charlton responded that the ride score does not need to be prominent in PM category, formula needs to be restructured to get district's seal coat program in.

Richard Skopik, TxDOT WAC, asked how much funding is required to capture roads of 10,000 ADT or less? Joe Graff, TxDOT MNT, responded that 20,000 lane miles a year seal coat leads to about $200,000,000. Studies indicate that districts need $450,000,000 needed to get on PM targets. Skopik responded that only enough money is available to maintain a seal coat program in the districts.

The workgroup then discussed the difficulties of the PM program in the districts. Dennis Cooley, TxDOT LUF, noted that the group should keep in mind rehabilitation and mobility projects that lessen the number of miles in the PM program.

The workgroup analyzed scenarios PM-13 and PM-12. The discussion on PM-13 revolved around overlay vs. seal coat ratios (50/50, 30/70, 20/80) in criteria F. Some members suggested taking out the overlay portion and dividing by 16 instead of 8. Gary Charlton, TxDOT DAL, suggested splitting out criteria F, creating a separate weighting for <10,000 and cycle period and >10,000 and cycle period. Dennis Cooley, TxDOT LUF, asked how do we justify the percentages given in the equations?

The group then suggested modifications to Scenario 12 (70/5/20/5). Judy Freisenhahl, TxDOT SAT, asked should we not still include criteria F? It is still the best variable on the list, use perhaps a lesser percentage, but it could still be used. Mary Owen, Longview MPO, suggested a sizable weight on PMIS to focus on needs. Dennis Cooley, TxDOT LUF, stated that the formula should use PMIS, lane miles used, but at different ratios in PM-12. He suggested 50/5/40/5. Gary Charlton, TxDOT DAL, stated that if the formula is providing the minimum to operate, then the equation is pretty stable. Cooley also cautioned the group regarding justification for lane miles, VMT, distress criteria, and bridge deck criteria.

Joe Graff, TxDOT MNT, pondered if a minimum allocation is possible for seal coat? The workgroup then discussed on minimum allocations. Graff also stated that we should create a formula that retains fairness no matter the amount of money.

Leo Betancourt, TxDOT ELP asked if we are double counting bridge miles? Jason Crawford, TTI, responded affirmatively, but we are doing it in many of the scenarios.

Dennis Cooley, TxDOT LUF, asked, regarding criteria F, what ADT would be the threshold to require a seal coat? The committee had noted that urban districts would gain because of >10,000 ADT roads in formulas. Richard Skopik, TxDOT WAC, asked if there is something in between, maybe 20,000 ADT? Discussion within the group followed but no consensus reached.

Rehabilitation Scenarios

The discussion of rehabilitation scenarios began with a comparison of FY2006 with the scenarios created in the first workshop.

The consensus of the group is that R-6 appears good. Discussion focused on a proactive/reactive balance, perhaps changing the weights for the PMIS scores and ride scores (G-1 to G-4) and spreading them out among the categories.

Consensus is that R-5 and R-6 seem to be the best for the group. Scenarios R-11 and R-12 are created. R-11 is a hybrid of 6; R-12 is a modified 6. Scenarios R-13 through R-16 were created using the cost index factor (before consensus reached on rejecting use of the index).

There is discussion over combining the lane miles categories D, E, F into one category, as scenario 5 and 6 give equal weight to each one. The category would become "On-system Lane Miles." Group consensus was positive.

Richard Skopik, TxDOT WAC, and Joe Nelson, TxDOT WF, discussed the need for maintaining Interstate system and perhaps more weight should be given to it in criteria A. Skopik also questioned the use of VMT. Perhaps more weight should be given to VMT, equalize with vehicles and maintain weight on ESALs, since only 5 percent weight given to it in all of the scenarios.

The workgroup then began to construct new scenarios on the spreadsheet provided by TxDOT TPP and TTI. Scenarios R-11 through R-17 had been created previous to the second day of discussion. Scenarios R-18 through R-24 were created in the course of the second day of the workshop.

The group likes R-20 except Dennis Cooley, TxDOT LUF, who states that we went from 30% PMIS data weight to 25% data weight and he is not sure that this is logical. The group had put an extra 5% in VMT, but the group corrects him and notes that the 5% was moved into the combined DEF criteria.

R-21 and R-22 are variations of 5% in Pavement Distress and Ride Quality from R-20. Richard Skopik, TxDOT WAC, is still inclined towards R-20 when compared to the others. He thinks VMT needs to have consideration. Dennis Cooley, TxDOT LUF, notes that part of the VMT is being captured in the ESALS. Cooley further states that rehabilitation dollars should be putting emphasis on the condition of the system. The best way of capturing that is PMIS and he thinks that 25% is too low a weight; previous formulas gave 35% to NHS. Skopik asks what was the VMT weight in the old formulas? Cooley responds that it was not in the old formula.

The workgroup agrees that ESALS are more indicative of damage and required rehab than VMT.

Joe Graff, TxDOT MNT, states that the group needs more information on the FY2006 numbers. Melisa Montemayor, TxDOT LAR, agrees that the committee needs to know more about how the numbers were calculated. The group agrees that they would like to know how the FY 2006 numbers for Rehabilitation were calculated. There is considerably more funding than in FY2005. Is the FY2006 number based on two-year PMIS data or on one-year data? The group wants to go with three-year data. Bryan Stampley, TxDOT CST, said he does not know how old the stress numbers are but thinks that Howard Lyons, TxDOT TPP used 2001 numbers.

The group also considered the prospect of using an average number across the five fiscal years calculated from what the chart shows and then enter an average total instead of the $834,579,000 for FY2006.

The group also stated that it might be interesting to run these new formulas through three or four years of data, particularly for scenario R-20. Others in the group stated that this would be a good test to see if some criteria dropped off significantly.

Dennis Cooley, TxDOT LUF, asked that TTI take what the group has done and distribute to the group with a breakdown of weights given for criteria. Gary Charlton, TxDOT DAL, also asked that scenario R-20 be run with historical PMIS data.

Next Meeting Date and Time

The next meeting dates and times scheduled for the workgroup were Thursday, August 1, 1:00 p.m. to 5:00 p.m. and Friday, August 2, 8:30 p.m. to 4:30 p.m.

DRAFT PROPOSED ALLOCATION CRITERIA FOR PREVENTIVE MAINTENANCE AND REHABILITATION

As of June 21, 2002

Preventive Maintenance

ID	Criteria
A	Lane miles on the State Highway System
B	Vehicle miles traveled per lane mile
C-1	Lane miles in "substandard" condition based on PMIS Distress Score between 70 and 89
C-2	Lane miles in "substandard" condition based on PMIS Distress Score between 65 and 85
C-3	Lane miles in "substandard" condition based on PMIS Condition Score between 70 and 89
C-4	Lane miles in "substandard" condition based on PMIS Condition Score between 60 and 79
C-5	Lane miles in "substandard" condition based on PMIS Ride Score between 3.0 and 3.9
C-6	Lane miles in "substandard" condition based on PMIS Ride Score between 2.5 and 3.5
D	Square footage of span bridge deck area
E	Ratio of lane miles greater than 10,000 ADT to total lane miles
F	Lane miles less than 10,000 ADT divided by cycle periods (5, 6, 7, years) (seal coat) AND 5 times lane miles greater or equal to than 10,000 ADT divided by cycle periods (8 years) (overlay).
G	12-month rolling average regional cost index supplied by CST ***[This is a multiplier]***

	Preventive Maintenance Scenario Weighting															
Criteria	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
A	80	70	70	70	70	80	70	70	70	70		75		80		
B	10	15	15	15	15	10	15	15	15	15		10		20		
C-1	10		5			10		5				10	10			100
C-2		5					5									
C-3				10					10							
C-4					10					10						
C-5			5					5								
C-6		5					5									
D		5	5	5	5		5	5	5	5	5	5	5			
E																
F											95		85		100	
G																
						X	X	X	X	X	X					

Rehabilitation

ID	Criteria	
A	Summation of flexible and rigid equivalent single axle loads per Interstate section multiplied times the Interstate section length (Interstate ESAL-miles)	
B	Summation of flexible and rigid equivalent single axle loads per non-Interstate NHS section multiplied times the Non-Interstate NHS section length (Non-Interstate NHS ESAL-miles)	
C	Summation of flexible and rigid equivalent single axle loads per non-Interstate non-NHS section multiplied times the Non-Interstate Non-NHS section length (Non-Interstate Non-NHS ESAL-miles)	
D	Interstate lane miles	On-System Lane Miles
E	Non-Interstate NHS lane miles	
F	Non-Interstate Non NHS lane miles	
G-1	Lane miles in "substandard" condition based on PMIS Distress Score less than 70	
G-2	Lane miles in "substandard" condition based on PMIS Distress Score less than 60	
G-3	Lane miles in "substandard" condition based on PMIS Ride Score less than 3.0	
G-4	Lane miles in "substandard" condition based on PMIS Ride Score less than 2.0	
G-5	Lane miles in "substandard" condition based on PMIS Distress Score less than 70 and equal to or greater than 61	
G-6	Lane miles in "substandard" condition based on PMIS Ride Score less than 3.0 and equal to or greater than 2.1	
G-7	Lane miles in "substandard" condition based on PMIS Distress Score less than 65	
G-8	Lane miles in "substandard" condition based on PMIS Ride Score less than 2.5	
H	Square footage of bridge deck area with sufficiency rating between 50 and 80	
I	Vehicle miles of travel	
J	Operational ITS centerline miles	
K	Centerline miles of two lane highways of less than 22 foot surface width	

	Rehabilitation Scenario Weighting												
Criteria	**5**	**6**	**11**	**12**	**17**	**Special**	**Special**	**19**	**20**	**21**	**22**	**23**	**24**
A	15	15	15	15	15			15	15	15	15	15	15
B	10	10	10	10	10			10	10	10	10	10	10
C	5	5	5	5	5			5	5	5	5	5	5
D	5	5	5	5									10
E	5	5	5	5	10			15	15	15	15	15	10
F	5	5	5	5									5
G-1	15					70							20
G-2		15	10		15		70	15	20	20	25	30	
G-3	15					30							5
G-4		15	10		15		30	10	5	10	5	10	
G-5			5										
G-6			5										
G-7				15									
G-8				15									
H	5	5	5	5	5			5	5	5	5	5	5
I	5	5	5	5	10			10	10	5	5	5	5
J	5	5	5	5	5			5	5	5	5	5	5
K	10	10	10	10	10			10	10	10	10	5	5

Appendix E
Workshop #3 Meeting Notes

UTP Restructuring Workshop
Category 1, Workshop 3
Thompson Conference Center
Austin, TX
August 1-2, 2002

Notes

Statements reported in these notes are not direct quotes, but reflect the general idea of the questions or comments made by each individual. Statements are not in exact chronological order as they occurred during the meeting. They have been arranged in order according to the topics that were discussed.

The third meeting of the Preventive Maintenance and Rehabilitation Work Group was held August 1-2, 2002 in Room 2.120 of the Thompson Conference Center located in Austin, Texas. Jason Crawford, TTI, moderated the group.

Jason Crawford, TTI, made welcoming remarks and reviewed the agenda for the workshop. He then provided hardcopies of spreadsheets he had transmitted electronically the day before. These handouts showed (1) lane mile breakdowns at various ADT levels for each district, and (2) pavement condition data generated from PMIS.

Lane Miles by ADT Distribution

Dennis Cooley, TxDOT LFK, stated that the criteria tying lane miles greater than an ADT threshold (Preventive Maintenance Criteria F) might not be a good measure. Bill Crumley, TxDOT BWD, agreed stating that Criteria F may still not result in enough money to do all the work needed in the Districts. Dennis Cooley then posed the question of using Criteria F or one of the criteria based solely on all lane miles. Kenneth Petr, TxDOT AMA, added that the distribution of lane miles by ADT data shows that simple lane miles might be a better determinant of basic needs. Dennis Cooley noted that funds might be pulled away from Districts with real needs if Criteria F is used. Bill Crumley ended stating that his was basically a seal coat district.

PMIS Data

Bill Crumley, TxDOT BWD, noted that it appears there is lots of old pavement and lots of variability from District to District. Dennis Cooley, TxDOT LFK, stated some of these ratings reflect the lack of adequate funds to address all existing seal coat and overlay needs.

Kenneth Petr, TxDOT AMA, noted that the data for Lubbock appeared distorted for 2000. Bryan Stampley, TxDOT CST, responded that the 2000 data might be somewhat distorted or even flawed in that some definitions for sampling were changed and not all Districts

responded correctly. He continued saying that this was corrected and rated correctly in 2001. Dennis Cooley, TxDOT LFK, asked if there was a set timeframe the roads are rated. Bryan Stampley responded that the data is collected in the fall. Last year most all of the Districts had submitted their data by December 15. Dennis Cooley further asked if there previously had been less uniformity in the data collection timeframe. Bryan Stampley responded that they have tried to concentrate the data collection to the fall so that there is better comparability between Districts. He continued saying that data collection in the fall, immediately after the peak summer seal coat activity and before the winter freeze-thaw cracking, might reflect the best pavement conditions for the year.

Leo Betancourt, TxDOT ELP, asked Bryan Stampley, TxDOT CST, when full automation of PMIS scoring is expected. Bryan Stampley responded that they are planning for 2005, but that it may not be fully in place until 2007. He further stated that there is a need to demonstrate the needs, value, and cost-effectiveness of a 100% sample collection.

Dennis Cooley, TxDOT LFK, expressed a desire to see a 3-year average of PMIS data to level out wide variations. Howard Lyons, TxDOT TPP, stated he preferred a 2-year average based on statistics. Bryan Stampley, TxDOT CST, added that a 2-year average should ideally provide the best balance with a 50% sample.

FY06 Programming Discussion

Howard Lyons, TxDOT TPP, discussed his response to the FY06 funding fluctuations from previous years. Howard Lyons stated that each year uses the most current data so of the data that were used in the old categories the PMIS numbers were more variable than the inventory data (e.g., lane miles) or activity data (VMT or Equivalent Single Axle Loads [ESALs]). Jason Crawford, TTI, referred the group to Tab 12 in their notebooks to review the currently programmed funding for Category 1 through FY06.

Dennis Cooley, TxDOT LFK, asked if the workgroup could sell the results and defend the criteria and formulas to all Districts, especially HOU. Gary Charlton, TxDOT DAL, noted there is never enough money and that some Districts may have to get more creative and be more flexible. Bill Crumley, TxDOT BWD, noted that bad management shouldn't be rewarded. Gary Charlton added that the workgroup should try to maintain funding at the minimum levels or questions might arise from other Districts. Jason Crawford, TTI, reminded the workgroup that they are trying to balance out the differences and validate the criteria chosen so that their recommendation is fair and justifiable.

Howard Lyons, TxDOT TPP, stated that it all comes down to what the Districts will get in 2007. He asked what would they have received in 2006 given the distribution formulas developed by this workgroup. Bill Crumley, TxDOT BWD, stated a need to have a valid basis for comparison.

Dennis Cooley, TxDOT LFK, asked if special funding were included in the programmed years and that was the cause for the fluctuations. Howard Lyons, TxDOT TPP, responded that the special programming could be withdrawn from the table. The workgroup asked Howard Lyons to provide the programming distributions less the special program funding, with the new PMIS data run on the old formulas (broken out by old category)

Preventive Maintenance Formula

Jason Crawford, TTI, began the discussion reviewing the several scenarios that were discussed and noted from the previous meeting (PM-6, 12, 13, 15, and 16). PM-6 consisted of three primary criteria that largely mimic the allocation formula in the old category but that it also included a Cost Index Factor. Because the Cost Index Factor was removed from consideration at the last workshop, this scenario then matches PM-1 that was not favored because of the lack of bridge needs in the formula as much as the scenarios being reviewed at this workshop. The criteria for the scenarios discussed at this workshop were:

CRITERIA		**PM-6**	**PM-12**	**PM-13**	**PM-15**	**PM-16**
A	On-System Lane-Miles	X	X			
B	VMT/Lane-Mile	X	X			
C-1	Lane-Miles with Pavement Distress Scores 70-89	X	X	X		X
D	On-System Bridge Deck Area		X	X		
F	Lane-miles less than 10,000 ADT divided by cycle periods (5, 6, 7, years based on geographic map) (seal coat) AND 5 times lane-miles greater than or equal to 10,000 ADT divided by cycle periods (8 years) (overlay).			X	X	
G	Regional Cost Index	X				

Jason Crawford, TTI, asked the workgroup to list the pros and cons for each of the remaining four scenarios. The following were recorded:

SCENARIO PM-12	
Pros	*Cons*
• Address system size (starts at the minimum) • Needs based (relies on PMIS) • Includes traffic variables • Includes bridges • Responds to July 19 Administrative Memo on Pavement Condition Goal Attainment Plan	• No correlation of treatment of traffic • Doesn't address environmental effects (weather, etc)

Other comments regarding PM-12 were made. Bill Crumley, TxDOT BWD, stated that this scenario does track district's pavement needs, especially in light of the recent (July 19, 2002) administrative memo on addressing pavement condition statewide.

SCENARIO PM-13	
Pros	*Cons*
• Is needs based • Includes environmental factors • Includes bridge • Correlates maintenance treatment to amount of traffic • Responds to July 19 Administrative Memo on Pavement Condition Goal Attainment Plan • Not attainable	• ADT breakpoint is less quantitative • Ideal situation

Other comments regarding PM-13 were made. Joe Graff, TxDOT MNT, stated that his division reports the Seal Coat cycle to the Texas Legislature. He noted that this cycle has been running at 8.5 years. Dennis Cooley, TxDOT LFK, stated that the funding formula shouldn't use the maintenance cycle as a basis for actual practice. Gary Charlton, TxDOT DAL, asked if the workgroup shouldn't we be looking at actual need and not maintenance cycles or environmental conditions. Howard Lyons, TxDOT TPP, stated that he felt VMT and PMIS sufficiently capture the needs requirement. Dennis Cooley responded that maybe the workgroup should consider using the pavement distress scores. Gary Charlton added that he likes the way the proposed funding distribution, but that he thinks the split on traffic is right & not real comfortable with the other aspects

SCENARIO PM-15	
Pros	*Cons*
• Ideal situation if everyone had all new roads • Accounts for differences, such as weather or environment, statewide • Puts all districts on same footing • Simple (minimal criteria) • Less likely for big swings in funding • Correlates maintenance treatment to amount of traffic	• Not needs based • Question the strength of the maintenance cycle given limited funding • Time based, rather than needs based • Not all districts are starting at the same point with pavement condition • Bridge needs not included • Only one criteria • Associated maps were less quantitative than group would like • Question the cycle length for arid districts

SCENARIO PM-16	
Pros	*Cons*
• Addresses pavement distress (needs statewide) • Distress doesn't equate to preventive maintenance • Distress equates to preventive maintenance	• Doesn't respond to July 19 Administrative Memo on Pavement Condition Goal Attainment Plan • Difficult to program • Bridge needs not included • No account for system mileage • Traffic needs not addressed • Too simple with one criteria • Big leap to rely solely on PMIS scores

A vote was taken by the workgroup as to which scenario they favored. The vote was:

VOTE	SCENARIO			
	PM-12	**PM-13**	**PM-15**	**PM-16**
In Favor	15	1	0	0

The workgroup then began to focus on the weighting distribution for the criteria within PM-12. Dennis Cooley, TxDOT LFK, asked the workgroup how strong they wanted the PMIS criteria to be. E'Lisa Smetana, San Angelo MPO, responded that she didn't want to see the distress scores over-weighted.

RUN	CRITERIA/WEIGHTINGS				NOTES
	A	**B**	**C-1**	**D**	
O	75	10	10	5	Weightings discussed in Workshop #2
P	70	5	20	5	Weightings discussed in Workshop #2
Q	50	5	40	5	Weightings discussed in Workshop #2
R	50	0	45	5	Weightings discussed in Workshop #2
S	45	5	45	5	Weightings discussed in Workshop #2
T	50	10	35	5	New weighting in Workshop #3 Boosted some urban and rural districts

Dennis Cooley, TxDOT LFK, noted that the Houston District might need more funding in preventive maintenance than rehabilitation. Bryan Stampley, TxDOT CST, responded that this is in reverse of what the data seems to show. He continued saying that districts with lots of concrete pavement tend to have PMIS scores going down. Richard Skopik, TxDOT WAC, responded that the Houston District's concrete scores are falling because they have joint problems. Dennis Cooley added that the Houston District's pavement is still pretty good and that they have problems with their seal coat surfaces.

Joe Graff, TxDOT MNT, stated that there wasn't much difference in the funding distribution depending on the weightings being considered. Gary Charlton, TxDOT DAL, agreed stating that at the metro or urban districts, there isn't too much different in the funding amounts with the small shifts in weightings. Richard Skopik, TxDOT WAC, added that the decision boils down to how much the workgroup is comfortable with the weighting on PMIS scores compared to what was previously used in past allocation formulas for this category.

Jason Crawford, TTI, polled the workgroup for which weighting distribution they favored. The result showed full support of the workgroup for Run Q. Dennis Cooley, TxDOT LFK, requested a hardcopy to review the next morning.

The next morning the workgroup began reviewing their decisions from the previous afternoon. Meg Moore, TxDOT TRF, was reviewing how the lane-miles affected the allocations in the various runs or iterations. Dennis Cooley, TxDOT LFK, added that several districts seem to have taken some hits in funding. He continued saying that he sees a disparity between the districts and noted that the funding levels don't track with the statewide distribution of lane-miles and VMT (e.g., Odessa and Bryan Districts).

Joe Graff, TxDOT MNT, stated he had pondered several issues overnight. He continued to say that he has a problem providing additional preventive maintenance funding to the Houston District because they transfer money out of that bank balance every year. He further noted that they haven't been addressing some of the obvious needs such as cracks on the concrete pavement. He suggested that the lane-miles of concrete pavement be removed from the pavement criteria and noted that some incentive might need to be added to encourage districts to address the needs of concrete pavement.

Gary Charlton, TxDOT DAL, responded that concrete pavement is a problem to maintain and that it takes special attention. He continued to say that problems have to be addressed early or they will start showing up in low PMIS scores. If Districts are going to meet the Administration's goals, they have to take action.

Dennis Cooley, TxDOT LFK, responded that when the urban districts do address the needs it costs them a lot more money to care of the concrete. He continued saying that if the PMIS distress scores remained in the 70-89 range that they would continue to get funding whether they use the funding where it is needed or not. Gary Charlton, TxDOT DAL, commented that if the workgroup were to take special action for the Houston District that it might hurt some of the other large metro districts like Dallas.

Richard Skopik, TxDOT WAC, noted that the "bump" in funding for Houston District might be a result of the large amount of bridge deck area they have (Houston District has almost 22% of the statewide bridge deck area). Jason Crawford, TTI, added that 5% of the formula equates to roughly $2.5M. Howard Lyons, TxDOT TPP, suggested that the bridge deck weight be reduced to something less than 5%. Joe Graff, TxDOT MNT, added that all districts need to address preventive maintenance for bridges, whether or not they use the funding for that purpose. Dennis Cooley, TxDOT LFK, asked if the goal of the workgroup is to force the Houston District to do what the money is allocated for. Joe Graff responded that Maintenance Division still requires the Houston District to use the preventive maintenance funding on other types of preventive maintenance. Jason Crawford, TTI, asked if the group they are trying "engineer" the formula to force a certain desired management practice. The workgroup responded negatively and added that they should not take that action. Dennis Cooley added that there might be some need to use preventive maintenance for some form of rehabilitation and that flexibility to manage funds at the District level shouldn't be taken away. Gary Charlton, TxDOT DAL, agreed with

Dennis Cooley's statement. Kenneth Petr, TxDOT AMA, added that the administrative memo, dated July 19, 2002, addressing pavement needs would take care of addressing management practice.

Judy Friesenhahn, TxDOT SAT, suggesting reducing the weight on bridges from 5% to 2% and that 3% be added to the on-system lane-miles. Dennis Cooley, TxDOT LFK, stated that a 5% weight on bridges was producing funding results that are appropriate. Ralph Banks, TxDOT BRG, stated that the 5% weight for bridge was reasonable to him. Bill Crumley, TxDOT BWD, stated that his district address some bridge work with some of the preventive maintenance funding. Joe Graff, TxDOT MNT, stated that over time as more pavement rated above 90 in distress score that all of this concern will balance out. Joe Nelson, TxDOT WFS, stated that there are other avenues for obtaining additional preventive maintenance or rehabilitation funding, so this formula should address the true district's needs based on the actual criteria results.

The group reached consensus on the following preventive maintenance formula and projected FY07 funding allocation:

WEIGHT	**CRITERIA**
53%	On-System Lane-Miles
5%	VMT per Lane-Mile
40%	3-year Average Lane-Miles with Pavement Distress Scores 70-89
2%	On-System Bridge Deck Area

DISTRICT	FY07 ALLOCATION
PARIS	$ 9,213,963
FORT WORTH	$ 10,994,287
WICHITA FALLS	$ 7,671,458
AMARILLO	$ 13,789,169
LUBBOCK	$ 14,665,012
ODESSA	$ 7,664,702
SAN ANGELO	$ 8,101,711
ABILENE	$ 9,219,084
WACO	$ 9,669,344
TYLER	$ 14,073,117
LUFKIN	$ 7,901,071
HOUSTON	$ 15,480,236
YOAKUM	$ 11,830,493
AUSTIN	$ 12,166,078
SAN ANTONIO	$ 14,314,276
CORPUS CHRISTI	$ 8,748,154
BRYAN	$ 7,963,215
DALLAS	$ 14,474,545
ATLANTA	$ 8,509,084
BEAUMONT	$ 7,509,932
PHARR	$ 6,698,048
LAREDO	$ 5,996,581
BROWNWOOD	$ 7,766,550
EL PASO	$ 7,742,810
CHILDRESS	$ 7,837,082
	$ 250,000,000

PMIS Data Averaging

Jason Crawford, TTI, then asked the workgroup about their opinions on averaging PMIS data. Do they prefer a 2- or 3-year average? Joe Graff, TxDOT MNT, stated that for snow and ice related funding they use a 5-year average of cost data but exclude the high and low in the 5 years. He continued saying that this has provided for a smoother budgeting and planning process. The group debated the merits of a 5-year average. Consensus was reached that a 3-year average of PMIS results be used.

Rehabilitation Formula

Jason Crawford, TTI, began the discussions on rehabilitation formulas by reviewing the workgroup's progress from the previous workshop. He noted that the workgroup had gravitated toward scenario R-20. Richard Skopik, TxDOT WAC, asked what criteria were included in R-20. Jason Crawford responded: Interstate highway ESALs, non-Interstate highway NHS ESALs,

non-NHS ESALs, on-system lane-miles, lane-miles with pavement distress score less than 60, lane-miles with pavement ride score less than 2.0, square footage of on-system bridge deck with rating 50-80, on-system VMT, centerline miles of operational ITS, and lane-miles of 2-lane highways with substandard surface width (less than 22'). After hearing the response, Richard Skopik noted that R-21 and R-22 had the same criteria but different weightings.

Ralph Banks, TxDOT BRG, noted that about $47M in project costs for bridge work that was let in FY 2001, was funded from the old categories that now make up new Category 1, with about $14.8M of that being from old Category 7. These totals are assumed to be split evenly between actual structure work and other costs related to a project, i.e. mobilization, traffic control, approach work, etc.

The workgroup asked to see the current weightings for scenarios R-20, R-21, and R-22. Those weightings were:

CRITERIA		R-20	R-21	R-22
A	Interstate highway ESALs	15	15	15
B	Non-Interstate highway NHS ESALs	10	10	10
C	Non-NHS ESALs	5	5	5
DEF	On-system lane-miles	15	15	15
G-2	Lane-miles with pavement distress score less than 60	20	20	25
G-4	Lane-miles with pavement ride score less than 2.0	5	10	5
H	Square footage of on-system bridge deck with rating 50-80	5	5	5
I	On-system VMT	10	5	5
J	Centerline miles of operational ITS	5	5	5
K	Lane-miles of 2-lane highways with substandard surface width (less than 22')	10	10	10

The workgroup then began discussing Criteria K – Lane-miles of 2-lane highways with substandard surface width (less than 22'). Workgroup members became concerned that including all substandard width lane-miles might be too broad and to instead focus on those 2-lane highways with significant traffic. Two ADT breakpoints were generated from this discussion: greater than 250 ADT and greater than 400 ADT. These breakpoints were thought to relate to certain breakpoints in the Design Manual. The group asked to have data for Criteria K broken out by these ADT breakpoints. Howard Lyons, TxDOT TPP, responded that he would give the request to staff and see if they could have an answer before the end of the workshop.

Dennis Cooley, TxDOT LFK, asked if the weight on Criteria A were too high. He continued saying that PMIS data is the foundation for this formula and it represents a good historical picture of pavement condition. Dennis stated that ESALs are an indication of the current pavement loadings, which levels the playing field between the volume of cars and trucks.

He continued saying that lane-miles simply give credit for the amount of mileage and that if pavement conditions are to be raised that he feels the emphasis should be placed on the distress and ride scores. These criteria are better justified for need and have the best value and merit. He asked the group if the weightings for the operational criteria (Criteria I and J) were too high at 10% combined. He also suggested lowering the emphasis on Criteria K. Meg Moore, TxDOT TRF, responded that ITS is mostly in the metro and urban districts and that Criteria I helps the rural districts. She continued saying that lowering the operational criteria some might help put greater emphasis on pavement scores, which is needed.

Dennis Cooley, TxDOT LFK, requested to see results by removing weight from the pavement ride score and increasing the emphasis on bridges (Criteria H) to 7%.

Bryan Stampley, TxDOT CST, responded to a question from the workgroup about the top priorities for pavement. He stated that based on the number of miles below the Commission's pavement condition goals, that the top four defects noted were for asphalt concrete pavement (ACP) in decreasing order: Ride, Failures, Patching, and Alligator Cracking. Defects with concrete pavements followed this list.

Gary Charlton, TxDOT DAL, suggested that instead of increasing the VMT Factor that additional weighting be added to the ESAL criteria.

Melisa Montemayor, TxDOT LRD, suggested moving some weight from the pavement distress score to non-Interstate highway ESALs.

Jason Crawford, TTI, noted that the group was tending to place 70% of the weighting on the cause and effect for pavement condition (ESALs – Criteria A, B, and C – and pavement condition – Criteria G-2 and G-4) and that operations were represented at 7% (Criteria I and J).

Joe Graff, TxDOT MNT, stated that from his travels around the state, he feels the weightings are realistic and fair.

The group discussed several alternatives for weighting the ESAL criteria (A, B, and C). Suggestions ranged from equal 10% weights to increased emphasis on B or C, in each case the total weight of these criteria was 30%. Howard Lyons, TxDOT TPP, noted that a 15/10/5 weight for Criteria A/B/C reflects the relative emphasis within current funding and priorities. After the group reviewed the various combinations, they claimed consensus that the weightings should be 15/10/5 for A/B/C.

The workgroup received the requested data for Criteria K. Jason Crawford, TTI, entered the data and began to run scenarios for the K criteria. Dennis Cooley, TxDOT LFK, stated that the data seems to point that the 400 ADT breakpoint should be used. Richard Skopik, TxDOT WAC, responded that the criteria might indicate that the funds should only be spent to widen roads less than 22 feet and with more than 400 ADT. The workgroup discussed the merits of no ADT breakpoint and with an ADT breakpoint. Richard Skopik stated that with the breakpoint, emphasis is placed on the real narrow roads with traffic and not narrow roads with very little traffic and thus less need. Discussion led to consensus for the 400 ADT breakpoint because that meets the 3R and 4R design standards in the Design Manual.

The group reached consensus on the following rehabilitation formula and projected FY07 funding allocation:

WEIGHT	CRITERIA
15%	Interstate Highway ESALs
10%	Non-Interstate Highway National Highway System ESALs
5%	Non-National Highway System ESALs
15%	On-System Lane-Miles
35%	3-year Average Lane-Miles with Pavement Distress Scores less than 60
5%	3-year Average Lane-Miles with Pavement Ride Scores less than 2.0
5%	On-System Bridge Deck Area with Rating 50-80
5%	On-System VMT
2%	Centerline-miles of Operational ITS
3%	Centerline-miles of 2-Lane Highway with ADT greater than 400 and Substandard Surface Width (less than 22 feet)

DISTRICT	FY07 ALLOCATION (FY06 Funding Level)	FY07 ALLOCATION ($850M)
PARIS	$ 28,902,323	$ 29,436,368
FORT WORTH	$ 43,350,212	$ 44,151,219
WICHITA FALLS	$ 17,647,486	$ 17,973,569
AMARILLO	$ 42,815,859	$ 43,606,992
LUBBOCK	$ 39,454,653	$ 40,183,679
ODESSA	$ 17,387,215	$ 17,708,488
SAN ANGELO	$ 15,730,492	$ 16,021,153
ABILENE	$ 21,818,893	$ 22,222,053
WACO	$ 29,020,511	$ 29,556,740
TYLER	$ 29,099,371	$ 29,637,057
LUFKIN	$ 27,592,889	$ 28,102,739
HOUSTON	$ 83,085,523	$ 84,620,742
YOAKUM	$ 32,049,433	$ 32,641,629
AUSTIN	$ 37,287,878	$ 37,976,868
SAN ANTONIO	$ 50,168,479	$ 51,095,471
CORPUS CHRISTI	$ 33,489,176	$ 34,107,975
BRYAN	$ 32,207,533	$ 32,802,650
DALLAS	$ 106,836,658	$ 108,810,741
ATLANTA	$ 20,798,076	$ 21,182,374
BEAUMONT	$ 35,626,661	$ 36,284,955
PHARR	$ 19,590,963	$ 19,952,956
LAREDO	$ 21,172,244	$ 21,563,456
BROWNWOOD	$ 11,687,849	$ 11,903,812
EL PASO	$ 26,355,257	$ 26,842,238
CHILDRESS	$ 11,403,368	$ 11,614,075
	$ 834,579,000	$ 850,000,000

Requesting PMIS Data Set for Formula

Bryan Stampley, TxDOT CST, provided the workgroup with an overview of the level of sampling used in PMIS for the three most current fiscal years:

FY00 50% samples
FY01 100% samples
FY02 100% samples

Richard Skopik, TxDOT WAC, asked if frontage roads were included in the sampling. Howard Lyons, TxDOT TPP, supported having the PMIS numbers with frontage road data for the most recent years. Bryan Stampley responded that it might not give you better data because there is some distortion in the frontage road data and that the frontage road data is not consistent among all districts. When asked if ramps were included in PMIS, Bryan Stampley responded that the

sampling machines are typically turned off when on entrance and exit ramps and that there isn't a good ADT source for ramp traffic.

Discussion of Recommendations Report

Dennis Cooley, TxDOT LFK, asked if the decisions of this workgroup should be reviewed by Administration. Jason Crawford, TTI, responded that they workgroup is to develop a recommendations report which will then be forward to the Commission in November.

Howard Lyons, TxDOT TPP, stated that the complete PMIS data will be obtained from Bryan Stampley, TxDOT CST, and will be included in the final spreadsheets transmitted to the workgroup.

Jason Crawford, TTI, asked the workgroup what special issues or minority points they wanted included in the recommendations report. Meg Moore, TxDOT TRF, stated that she wanted to see an emphasis on traffic needs. She continued saying that many traffic engineers feel this area is getting shortchanged. Mary Owen, Longview MPO, asked that he include the details for the variables considered and how the final selection was arrived at.

Next Meeting Date (Tentative)

A tentative date of September 25, 2002 was selected by the group to reconvene, if needed, to discuss the content of the recommendations report in lieu of a lengthy e-mail discourse. A meeting location and more specific times will be arranged when the need for this meeting appears from the peer review.