# Kingwood Area Mobility Plan
## Steering Committee Meeting #4

**GUNDAC Project No. 14004-01**  
**Date:** Sept. 23, 2014, 6:00 PM  
**Location:** Kingwood Community Center

## SIGN-IN SHEET

<table>
<thead>
<tr>
<th>NAME</th>
<th>FIRM/AGENCY</th>
<th>E-MAIL</th>
<th>TELEPHONE</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
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## Steering Committee Meeting #4

**GUNDA Project No. 14004-01**
Date: Sept. 23, 2014, 6:00 PM
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<td>Kathy Parks</td>
<td>LCS-Kingwood</td>
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<td></td>
</tr>
<tr>
<td>Jeff Nielsen</td>
<td>TIRZ</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Introduction

- Remarks by Stan Sarman/Council Member Dave Martin
Recap

PROJECT KICKOFF
- COLLECTION & REVIEW OF DATA
- STEERING COMMITTEE MEETING #1
- EVALUATION OF EXISTING CONDITIONS
- STEERING COMMITTEE MEETING #2
- STAKEHOLDER MEETING #1

STEERING COMMITTEE MEETING #3
- ANALYSIS & IDENTIFY SOLUTIONS
- STEERING COMMITTEE MEETING #4
- STAKEHOLDER MEETING #2
- AGENCY COORDINATION
- STEERING COMMITTEE MEETING #5

FINAL REPORT

September 23, 2014
Update

- E-mails
- Survey
- Improvement Options and Analysis
- This information will be posted on the website
<table>
<thead>
<tr>
<th>GOALS</th>
<th>MOE’S</th>
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</thead>
<tbody>
<tr>
<td>▪ Obtain community input</td>
<td>▪ Less congestion</td>
</tr>
<tr>
<td>▪ Improve mobility – short and long term</td>
<td>▪ Decrease delay/travel time</td>
</tr>
<tr>
<td>▪ Maintain same or better quality of life</td>
<td>▪ Pedestrian safety/bicycle safety</td>
</tr>
<tr>
<td>▪ Identify funding sources</td>
<td>▪ Vehicular safety</td>
</tr>
<tr>
<td>▪ Educate public regarding funding sources</td>
<td>▪ Cost effectiveness</td>
</tr>
<tr>
<td>▪ Plan for future</td>
<td>▪ Schedule</td>
</tr>
<tr>
<td>▪ Safety</td>
<td>▪ Regulatory impacts</td>
</tr>
<tr>
<td>▪ Possible transit for aging population</td>
<td>▪ Environmental impacts including Tree Impacts</td>
</tr>
<tr>
<td>▪ Pedestrian facilities as part of Street Improvements</td>
<td></td>
</tr>
<tr>
<td>▪ Public transportation</td>
<td></td>
</tr>
<tr>
<td>▪ Trolley system – not typical METRO bus</td>
<td></td>
</tr>
<tr>
<td>▪ Quick fixes</td>
<td></td>
</tr>
</tbody>
</table>
New Developments

- Known Developments
  - Kings Creek Mixed Use – 2014 Opening Year
  - Kingwood Parc Medical Office – 2015 Opening Year
  - Watercrest Kingwood Senior Apartments – 2015 Opening Year
  - Kings Crossings Retail – 2017 Opening Year
  - Royal Brook Residential - 2018 Opening Year
  - Woodridge Forest Development – 2018 Opening Year
  - Riverpoint Village – 2018 Opening Year
  - New Caney Middle School – 2014 Opening Year
- Background Growth Rate of 2% per year up to 2020
- Approximately 4,000 trip-ends during peak hour due to these additional developments
Planned/Funded/Scheduled Roadway and Other Infrastructure Improvements
Public Input – E-mails and Survey

- 111 E-mail Comments as of September 17, 2014
  - 30 E-mail comments since our last Steering Committee Meeting # 3
  - Still receiving e-mails
- 1,075 surveys
  - Survey closed on June 30, 2014
Suggested Improvements by Citizens and Feasibility

- Reversible lanes on Kingwood Drive **Not Feasible**
- Woodland Hills Connection to Hamblen **Analyzed**
- Innovative Improvements such as roundabouts, diverging diamonds, and All-way stops **Not Feasible**
- Other intersection Improvements including signal timing improvements **Analyzed**
- Maintain green band for peak directions by eliminating off-peak left-turns **Analyzed**
- Direct Connector from Kingwood Drive to US 59 **Analyzed**
- Widen both Kingwood Drive and Northpark Drive **Analyzed**
Suggested Improvements by Citizens and Feasibility

- Coordinate with Union Pacific on Rail Road timings and restrict rail timings during peak hours  **Coordinated**
- Widen Hamblen Road to 4-Lanes  **Analyzed**
- Connection to Huffman to the east  **Not Feasible**
- Woodland Hills Connection through FM 1960 and ultimately to BW 8  **Not Feasible**
Question 1: Which Category best describes your interest?

- 94% of the people identified themselves as local residents
Q2: Which locations or intersections in Kingwood do you think have the most traffic issues?

- Kingwood/494: 497 responses
- Kingwood/West Lake Houston: 320 responses
- Northpark/494: 287 responses
- Kingwood/Woodland Hills: 222 responses
- Kingwood/Royal Forest: 195 responses
- Kingwood/Chesnut Ridge: 193 responses
- Kingwood/Green Oak: 170 responses
- Kingwood/HW 59: 144 responses
Question 3
What transportation-related issues in the Kingwood area concern you the most?

SAFETY
- Speeding drivers (general)
- Unsafe driving habits...
- Lack of police presence...
- Emergency vehicles...
- Accidents (general)

CONGESTION
- Congestion (general)
- Congestion on Kingwood Dr...
- PM peak hour congestion
- Train issues/congestion
- AM peak hour congestion

ENVIRONMENTAL CONCERNS & ALTERNATIVE TRANSPORTATION
- Do not want trees removed
- Not enough sidewalks
- Lack of bicycle facilities/paths
- Lack of mass public transportation
- Trees need to be cut/trimmed (visibility)
Question 4 to 9

Walking and Biking

Q4 Other than for recreation, do you or your employees/students walk to work/school in Kingwood?

Answered: 1,620 Skipped: 56

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
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</thead>
<tbody>
<tr>
<td>Always</td>
<td>6.76%</td>
</tr>
<tr>
<td>Never</td>
<td>69.71%</td>
</tr>
<tr>
<td>Occasionally</td>
<td>22.53%</td>
</tr>
<tr>
<td>Total</td>
<td>1,620</td>
</tr>
</tbody>
</table>

Q7 Other than for recreation, do you or your employees/students bicycle to work/school in Kingwood?

Answered: 1,018 Skipped: 39

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
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</thead>
<tbody>
<tr>
<td>Always</td>
<td>4.53%</td>
</tr>
<tr>
<td>Never</td>
<td>92.29%</td>
</tr>
<tr>
<td>Occasionally</td>
<td>23.18%</td>
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<tr>
<td>Total</td>
<td>1,018</td>
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</table>
Q.10 What do you think should be done to roadways in the Kingwood area to improve mobility?
Question 11
Are there any traffic-related safety concerns in Kingwood? Do you have any suggestions for these issues?

**Driver Behavior**
- Speeding drivers: 100
- Police enforcement of safe driving: 67
- Bad/not courteous drivers/texting/talking on phone: 36
- Drivers running red lights: 19

**Pedestrian/Bike Safety**
- Consider marked bike lanes: 13
- Riding a bike/walking is very dangerous: 9
- Add more sidewalks along major thoroughfares: 9
- Ports of the green belt along Kingwood Dr: 5
- Make students walk to school/Provide them: 4

**Visibility Issues**
- Visibility concerns due to vegetation: 3
- At many intersections the turning lane signs: 2
- Turning lanes in the medians are not.: 2
- Kingwood Dr at Woods Estates: 2
- When turning onto Northpark Dr from a.: 2
• 63% of the people are willing to sacrifice trees for savings of at least 10 minutes
• 23% are not willing to sacrifice any trees
• 14% are undecided
Concerns by Location/Intersection

- Kingwood/494 Lake Houston: 497 responses
- Kingwood/West: 320 responses
- Northpark/494: 287 responses
- Kingwood/Woodland Hills: 222 responses
- Kingwood/Royal Forest: 186 responses
- Kingwood/Chestnut Ridge: 193 responses
- Kingwood/Green Oak: 170 responses
- Kingwood/HW 59: 144 responses
Travel Time Data

Field Collected Travel Times

AM Peak (Westbound)
On Kingwood Drive from High Valley to US 59 SB Frontage Road = 16.8 Min

PM Peak (Eastbound)
On Kingwood Drive from US 59 SB Frontage Road to High Valley = 18.4 Min

Synchro Model

AM Peak (Westbound)
On Kingwood Drive from High Valley to US 59 SB Frontage Road = 17.7 Min

PM Peak (Eastbound)
On Kingwood Drive from US 59 SB Frontage Road to High Valley = 20.3 Min
## Speed Data

### Kingwood High School (Westbound)

<table>
<thead>
<tr>
<th>Peak Period</th>
<th>Total</th>
<th>&lt;25 mph</th>
<th>26-35 mph</th>
<th>36 to 45 mph</th>
<th>&gt;45 mph</th>
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<tbody>
<tr>
<td>6:30 AM to 7:45 AM</td>
<td>1,739</td>
<td>446</td>
<td>433</td>
<td>583</td>
<td>277</td>
</tr>
<tr>
<td>2:30 PM to 3:15 PM</td>
<td>1,503</td>
<td>242</td>
<td>406</td>
<td>572</td>
<td>283</td>
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</table>

**School Zone Flasher Timings**: 6:40 AM to 7:40 AM and 2:30 PM to 3:15 PM

**Posted Speed**: 40 mph; School Zone Speed = 25 mph

**85th Percentile Speed**: 49.2 mph (DAILY BASIS)

### Kingwood High School (Eastbound)

<table>
<thead>
<tr>
<th>Peak Period</th>
<th>Total</th>
<th>&lt;25 mph</th>
<th>26-35 mph</th>
<th>36 to 45 mph</th>
<th>&gt;45 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 AM to 7:45 AM</td>
<td>973</td>
<td>348</td>
<td>532</td>
<td>91</td>
<td>2</td>
</tr>
<tr>
<td>2:30 PM to 3:15 PM</td>
<td>893</td>
<td>379</td>
<td>466</td>
<td>47</td>
<td>1</td>
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**School Zone Flasher Timings**: 6:40 AM to 7:40 AM and 2:30 PM to 3:15 PM

**Posted Speed**: 45 mph; School Zone Speed = 25 mph

**85th Percentile Speed**: 35 mph (DAILY BASIS)
## Speed Data

### Creekwood Middle School (Southbound)

<table>
<thead>
<tr>
<th>Peak Period</th>
<th>Total</th>
<th>&lt;20 mph</th>
<th>20-30 mph</th>
<th>30 to 45 mph</th>
<th>&gt;45 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:45 AM to 9:00 AM</td>
<td>1,157</td>
<td>205</td>
<td>726</td>
<td>211</td>
<td>15</td>
</tr>
<tr>
<td>3:30 PM to 4:30 PM</td>
<td>1,233</td>
<td>197</td>
<td>522</td>
<td>493</td>
<td>21</td>
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</table>

**School Zone Flasher Timings**

7:50 AM to 8:50 AM and 3:40 PM to 4:25 PM

**Posted Speed**

45 mph; School Zone Speed = 20 mph

**85th Percentile Speed**

44.1 mph (DAILY BASIS)

### Creekwood Middle School (Northbound)

<table>
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<th>Peak Period</th>
<th>Total</th>
<th>&lt;20 mph</th>
<th>20-30 mph</th>
<th>30 to 45 mph</th>
<th>&gt;45 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:45 AM to 9:00 AM</td>
<td>1,353</td>
<td>373</td>
<td>541</td>
<td>439</td>
<td>0</td>
</tr>
<tr>
<td>3:30 PM to 4:30 PM</td>
<td>1,277</td>
<td>519</td>
<td>353</td>
<td>394</td>
<td>11</td>
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</table>

**School Zone Flasher Timings**

7:50 AM to 8:50 AM and 3:40 PM to 4:25 PM

**Posted Speed**

45 mph; School Zone Speed = 20 mph

**85th Percentile Speed**

40.3 mph (DAILY BASIS)
COH MTFP Thresholds

- City of Houston MTFP volume thresholds
  - 2-Lanes = 14,000 to 16,000 vehicles/day
  - 4-Lanes = 30,000 to 33,000 vehicles/day
  - 6-Lanes = 40,000 to 45,000 vehicles/day

- Kingwood Drive from US 59 to Woodland Hills Drive - Exceeded the threshold (Current Data=37K to 41K per day)

- Northpark Drive from US 59 to Woodland Hills Drive - Exceeded the threshold (Current Data=35K per day)

- West Lake Houston Parkway from Kingwood Drive to Bridge (south) – (Current Data=31K/day)
Improvement Alternatives

1. Intersection Improvements

2. Left-Turn Prohibition in Off-Peak Direction
   A. 6-Lane Kingwood Drive only
   B. 6-Lane Northpark Drive only
   C. Direct Connector from Kingwood Drive to US 59 only
   D. Direct Connector from Northpark Drive to US 59 only
   E. 6-Lane Kingwood Drive with direct connector from Kingwood Drive to US 59
   F. 6-Lane Northpark Drive with direct connector from Northpark Drive to US 59
   G. 6-Lane Kingwood Drive, 6-Lane Northpark Drive, Direct Connector from Kingwood Drive to US 59, and Direct Connector from Northpark Drive to US 59
   H. Woodland Hills Drive Extension to Hamblen Road
   I. Widening of Kingwood Drive and Northpark Drive
   J. Underpass on Kingwood Drive @ Loop 494/Rail Road
   K. Underpass on Northpark Drive @ Loop 494/Rail Road
Option 1: Intersection Improvements

- Traffic Signal Timing Coordination
- New Traffic Signal at Northpark Drive & Hidden Pines/Woodridge Parkway
- EBR at Northpark Drive & Hidden Pines
- EBR at Northpark Drive & West Lake Houston Parkway
- NBR at West Lake Houston Parkway & Kings Crossings Drive
- NBR at Kingwood Drive & Sorters Road
- EBR and WBR at Kingwood Drive & Loop 494
- NBR at Kingwood Drive & Royal Forest Drive
- EBR at Kingwood Drive & Green Oak Drive
Option 1: Intersection Improvements

- EBR at Kingwood Drive & Trailwood Village Drive
- NBR & SBR at Kingwood Drive & Chestnut Ridge Road
- EBR, WBR, EBL, WBL at Kingwood Drive & Woodland Hills Drive
- EBR at Kingwood Drive & Willow Terrace
- EBL at Hamblen Road & Forest Cove Drive
- Widening of Mills Branch Road from North of Kingwood Drive to Royal Brook Residential (New Development), north of Northpark Drive
Option 1: Intersection Improvements
Option 1: Intersection Improvements

- **Total Delay (in 2014):**
  - Before: 1,176 Hours (AM); 1,963 Hours (PM)
  - After: 988 Hours (AM); 1,552 Hours (PM)
  - Reduction: 16% (AM); 21% (PM)

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,302 Hours (AM); 2,131 Hours (PM)
  - Reduction: 23% (AM); 25% (PM)

- **Cost of Improvements = $16.35 Million**

- **Crash Reduction = 52.50%**

- **Tree Impacts = < 10%**

- **Number of Intersections at LOS E/F with Improvements (2014) = 10**

- **Number of Intersections at LOS E/F with Improvements (2020) = 20**
Option 2: Left Turn Prohibition in Off-Peak

- On Kingwood Drive Only
- At 12 locations on Kingwood Drive, additional left-turns and acceleration lanes are required for restricted left-turns to turn around.

Total Delay (in 2014):
- Before: 1,176 Hours (AM); 1,963 Hours (PM)
- After: 1,032 Hours (AM); 1,700 Hours (PM)
- Reduction: 12% (AM); 13% (PM)

Total Delay (in 2020):
- Before: 1,689 Hours (AM); 2,849 Hours (PM)
- After: 1,560 Hours (AM); 2,596 Hours (PM)
- Reduction: 7.5% (AM); 9% (PM)

- Cost = $6.4 Million
- Tree Impacts = <10%
- Crash Reduction = 30%
Alternative A

Lake Houston/Kingwood Area Mobility Study
Alternative A: Kingwood Six Lanes (US 59 to Woodland Hills)

Legend
- Tree Impacts
- Kingwood Six Lane
- Major Thoroughfare
- County Line
- Park
- Water
Alternative A

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,081 Hours (AM); 1,845 Hours (PM)
  - Reduction: 36% (AM); 35% (PM)

- **Cost of Improvements = $31.3 Million**

- **Crash Reduction = 60%**

- **Tree Impacts = < 10%**

- **Number of Intersections at LOS E/F = 9**

- **Pros:** Reduces Travel Time, Congestion, Already funded

- **Cons:** Some tree impacts
Alternative B

Lake Houston/Kingwood Area Mobility Study
Alternative B: North Park Six Lanes (US 59 to Woodland Hills)
Alternative B

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,146 Hours (AM); 1,895 Hours (PM)
  - Reduction: 32% (AM); 34% (PM)

- **Cost of Improvements = $27.1 Million**

- **Crash Reduction = 30%**

- **Tree Impacts = < 10%**

- **Number of Intersections at LOS E/F with Improvements (2020) = 12**

- **Pros:** Reduces Travel Time and Congestion

- **Cons:** Some tree impacts, multiple agency coordination, Montgomery County Roadway, Funding not readily available
Alternative C

Lake Houston/Kingwood Area Mobility Study
Alternative C: Kingwood Drive Direct Connector (Kingwood Drive to US 59 Southbound)
Alternative C

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,432 Hours (AM); 2,265 Hours (PM)
  - Reduction: 15% (AM); 21% (PM)

- **Cost of the Improvement:** $50.72 Million

- **Tree Impacts:** <10%

- **Crash Reduction = 15%**

- **Number of Intersections at LOS E/F with Improvements (2020) = 15**

- **Pros:** Reduces Travel Time, Congestion, by eliminating turning movements at LP 494 and US 59

- **Cons:** Some tree impacts, High Cost, Aesthetics, Environmental Clearances
Alternative D

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,536 Hours (AM); 2,274 Hours (PM)
  - Reduction: 9% (AM); 20% (PM)

- **Cost of the Improvement:** $50.52 Million

- **Tree Impacts:** <10%

- **Crash Reduction:** 15%

- **Number of Intersections at LOS E/F with Improvements (2020) = 12**

- **Pros:** Reduces Travel Time, Congestion at Loop 494 near rail road

- **Cons:** Some tree impacts, High Cost, Aesthetics, Environmental Clearances
Alternative E

Lake Houston/Kingwood Area Mobility Study

Alternative E: Kingwood Drive Six Lanes + Kingwood Drive Direct Connector
Alternative E

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,043 Hours (AM); 1,816 Hours (PM)
  - Reduction: 38% (AM); 36% (PM)

- **Cost of the Improvement:** $82 Million

- **Tree Impacts:** <10%

- **Crash Reduction:** 60%

- **Number of Intersections at LOS E/F with Improvements (2020) = 6**

- **Pros: Reduces Travel Time and Congestion, Already funded for widening**

- **Cons: Some tree impacts, High Cost, Aesthetics, TxDOT coordination, Environmental Clearances for over pass**
Alternative F

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,010 Hours (AM); 1,816 Hours (PM)
  - Reduction: 40% (AM); 36% (PM)

- **Cost of the Improvement:** $77.6 Million

- **Tree Impacts:** <10%

- **Crash Reduction:** 30%

- **Number of Intersections at LOS E/F with Improvements (2020) = 8**

- **Pros:** Reduces Travel Time, Congestion

- **Cons:** Some tree impacts, High Cost, Aesthetics, TxDOT coordination, Environmental Clearances for over pass, multiple agency coordination, Montgomery County Road
Alternative G

Lake Houston/Kingwood Area Mobility Study

Legend:
- Tree Impacts
- Kingwood Six Lane
- Kingwood Direct Connector
- North Park Six Lane
- North Park Direct Connector
- Major Thoroughfare
- County Line
- Park
- Water
Alternative G

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 795 Hours (AM); 1,690 Hours (PM)
  - Reduction: 53% (AM); 41% (PM)

- **Cost of the Improvement:** $159.64 Million

- **Tree Impacts:** <10%

- **Crash Reduction:** 70%

- **Number of Intersections at LOS E/F with Improvements (2020) = 0**

- **Pros:** Reduces Travel Time, Congestion, Already funded for widening

- **Cons:** Some tree impacts, High Cost, Aesthetics, TxDOT coordination, Environmental Clearances for over pass, Cost Prohibitive, Multiple Agency Coordination
Alternative H

Lake Houston/Kingwood Area Mobility Study
Alternative H: Woodland Hills Four Lane Extension

Legend
- Woodland Hills 4 Lane Extension
- Major Thoroughfare
- County Line
- Park
- Water
Alternative H

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 795 Hours (AM); 1,690 Hours (PM)
  - Reduction: 53% (AM); 41% (PM)

- **Cost of the Improvement:** $45.10 Million

- **Tree Impacts:** <30%

- **Crash Reduction:** 11%

- **Number of Intersections at LOS E/F with Improvements (2020) = 9**

- **Pros:** Reduces Travel Time and Congestion on Kingwood Drive, Provides a reliable alternative route for the area

- **Cons:** Significant tree impacts, not funded, ROW, environmental clearances
Alternative I

Lake Houston/Kingwood Area Mobility Study
Alternative I: Kingwood Six Lanes (US 59 to Woodland Hills) + North Park Six Lanes (US 59 to Woodland Hills)

Legend
- Tree Impacts
- North Park Six Lane
- Kingwood Six Lane
- Major Thoroughfare
- County Line
- Park
- Water

GUNDA CORPORATION
Geomatics, Business Intelligence

KINGWOOD
Alternative I

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 951 Hours (AM); 1,759 Hours (PM)
  - Reduction: 44% (AM); 38% (PM)

- **Cost of the Improvement:** $58.4 Million

- **Tree Impacts:** <10%

- **Crash Reduction:** 70%

- **Number of Intersections at LOS E/F with Improvements (2020) = 3**

- **Pros:** Reduces Travel Time and Congestion, Partly funded

- **Cons:** More tree impacts, multiple agency coordination, need to identify funding for Northpark Road
Alternative J

Lake Houston/Kingwood Area Mobility Study
Alternative J: Kingwood Drive Underpass

Legend:
- Yellow: Kingwood Underpass
- Solid Line: Major Thoroughfare
- Green: Park
- Water

Intersection Improvements

GUNDA CONSULTANTS
Phase 1: Feasibility
Phase 2: Design
Phase 3: Construction
Phase 4: Evaluation

Kingwood

Legend:
- Kingwood Underpass
- Major Thoroughfare
- Park
- Water
Alternative J

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,467 Hours (AM); 2,282 Hours (PM)
  - Reduction: 13% (AM); 20% (PM)

- **Cost of the Improvement:** TBD

- **Tree Impacts:** <10%

- **Crash Reduction:** 7.5%

- **Number of Intersections at LOS E/F with Improvements (2020) = 8**

- **Pros:** Reduces Travel Time and congestion at Loop 494 near Railroad

- **Cons:** Some tree impacts, all trees between US 59 & Loop 494, TXDOT and UP Rail Road Coordination, Impact to Retail Driveway at Royal Forest Drive
Alternative K

Lake Houston/Kingwood Area Mobility Study
Alternative K: North Park Drive Underpass

Legend:
- North Park Underpass
- Major Thoroughfare
- County Line
- Park
- Water

Intersection Improvements
Alternative K

- **Total Delay (in 2020):**
  - Before: 1,689 Hours (AM); 2,849 Hours (PM)
  - After: 1,554 Hours (AM); 2,288 Hours (PM)
  - Reduction: 8% (AM); 20% (PM)

- **Cost of the Improvement:** TBD

- **Tree Impacts:** <10%

- **Crash Reduction:** 7.5%

- **Number of Intersections at LOS E/F with Improvements (2020) = 12**

- **Pros:** Reduces Travel Time and congestion at Loop 494 near Railroad

- **Cons:** Some tree impacts, all trees between US 59 & Loop 494, TXDOT and UP Rail Road Coordination.
Scoring Criteria

- Scoring MOE’s
- Scoring Goals
- Weighting Factors

<table>
<thead>
<tr>
<th>Improvements/Goals</th>
<th>Community Input</th>
<th>Improve Mobility (Short-Term &amp; Long-Term)</th>
<th>Maintain Same or Better Quality of Life</th>
<th>Identify Funding Sources</th>
<th>Safety</th>
<th>Transit</th>
<th>Public Transportation</th>
<th>Pedestrian Facilities</th>
<th>Total Score</th>
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<tr>
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<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
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<td>5</td>
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Hands on Exercise

- Review each improvement Option and assign score for each option
- Based on the weighting factors, the score will be calculated
- Higher the score, better the option
Next Steps

▪ Stakeholder Meeting #2 – October 14, 2014 @ 5:30 PM

▪ Open House Format with Exhibits at Stations

▪ Next Steering Committee Meeting Date: November 18, 2014 @ 6:00 PM

▪ Survey Summary and data will be posted on the website http://gundacorp.com/kingwood-mobility/
Questions?