Welcome to the Spotlight on the Regional Growth Forecast!

Friday, August 1, 2014
Houston-Galveston Area Council
H-GAC serves:

- 13 counties
- 105 cities
- MPO for 8-county metro area
Metropolitan Planning Organization (MPO) Responsibilities

- Develop Long Range Transportation Plan
- Support On-going Transportation Planning
- Approve short range state/federal project funding
Transportation Funding to the Region

- State/Federal
  - decennial census population
  - system size and condition
  - traffic volumes, transit ridership
  - air quality
  - Federal/State discretionary funds
Transportation Funding for Projects

• Goals in Regional Transportation Plan
• Evaluation measures
  - Safety
  - Mobility
  - Asset condition and service level
  - Economic impact
Role of Regional Economic and Demographic Forecast

• Understand Present and Future Travel
• Identify Impact/Benefits of Transportation Investments
• Informs Local Decisions
  – Transportation Priorities
  – Locally funded investments
  – Regional investments - Transportation Policy Council
Role of Demographic/Economic Forecasting

- **NOT** used to divide funding by political jurisdiction

- Is a transportation planning tool
  - Development “scenarios”
  - Target most robust transportation investment
  - Linked to other transportation models
spotlight on the REGIONAL GROWTH FORECAST

Friday, August 1, 2014
Houston-Galveston Area Council
Two Distinct Questions

1. How many people and jobs will be in our region 30 years from now?
   – Demographic and Employment Forecast

2. Where within the region will the people live and work?
   – Land Use Forecast
Part I: Demographic Forecast
### Sources of Population Change

<table>
<thead>
<tr>
<th>GAIN</th>
<th>LOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Births</td>
<td>Deaths</td>
</tr>
<tr>
<td>In-Migration</td>
<td>Out-Migration</td>
</tr>
</tbody>
</table>

- Stable trends in fertility and survival
- “Vital Statistics”
Migration

• More complicated:
  – cumulative
  – entirely social (no biological component)
  – can fluctuate
  – family/household is the fundamental unit

• Migration flows:
  – in-migration (+)
  – out-migration (-)

• Net migration: balance
# Annual Migration Flows for the H-GAC Region (in thousands)

<table>
<thead>
<tr>
<th>Origin/Destination</th>
<th>IN-Migration</th>
<th>OUT-Migration</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>185</td>
<td>-170</td>
<td>15</td>
</tr>
<tr>
<td>Texas (non-H-GAC)</td>
<td>74</td>
<td>-88</td>
<td>-14</td>
</tr>
<tr>
<td>US</td>
<td>111</td>
<td>-82</td>
<td>29</td>
</tr>
<tr>
<td>International</td>
<td>49</td>
<td>n/a</td>
<td>49</td>
</tr>
<tr>
<td>All</td>
<td>234</td>
<td>-170</td>
<td>64</td>
</tr>
</tbody>
</table>

Source: ACS County to County Migration, 2007-2011
Demographic Micro Simulation

- Beyond Cohort-Component
- Computer micro simulation:
  - Biological events: aging, births, deaths
  - Migration events: moving in, moving out
  - Family events: marriage, divorce, child moving out of parents house
- Advantages
  - Household composition
  - Link to housing
Population and Employment

• Population $\rightarrow$ Labor Force
  Labor Force = Employed + Unemployed

• Labor Force Participation Rates

• Unemployment Rate
  – system-wide
  – demographically-specific
Assumptions and Scenarios
Population Forecasts

- TXSDC Scenario 1.0
- UH IRF - CDS
- IHS
- Woods&Poole
- H-GAC (2014Q2)
- TXSDC Scenario 0.5
- TWDB

Years: 2010 to 2040
Millions: 5.5 to 12.0
## Summary

<table>
<thead>
<tr>
<th>Year</th>
<th>Million People</th>
<th>Million Jobs (Wage &amp; Salary)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>5.8 (+1.2)</td>
<td>2.5 (+0.3)</td>
</tr>
<tr>
<td>2020</td>
<td>7.1 (+1.3)</td>
<td>3.0 (+0.5)</td>
</tr>
<tr>
<td>2030</td>
<td>8.3 (+1.2)</td>
<td>3.5 (+0.5)</td>
</tr>
<tr>
<td>2040</td>
<td>9.6 (+1.3)</td>
<td>3.9 (+0.4)</td>
</tr>
</tbody>
</table>
Population and Employment Forecast

- Demographic dynamics
- Frequent updates (ACS, BLS, BEA, TWC)
- Population / Workforce balance
- Demand proxies for
  - Housing
  - Non-residential space
www.h-gac.com/forecast
forecast@h-gac.com
spot light
on the
REGIONAL GROWTH FORECAST

Friday, August 1, 2014
Houston-Galveston Area Council
Population
2010
Jobs
2010
Part II: Land Use Forecast
What is “Regional Growth”? 

• More people, more jobs 
• More buildings 
• Geography of population and employment = Geography of buildings 
• “Land Use” (small area) 
  – Structure: Buildings and Parcels 
  – Activity: People and Jobs
New Approaches in Land Use Forecasting

- Real Estate Development
- Computer Simulation
- Disaggregate analysis
  - individual parcels
- “Virtual Experiment”
  - setting initial conditions
  - defining rules
  - observing the outcomes
Components

• Information on land and structures
  – Location, type, valuations (rents), age

• Demand measures
  – What and how much to build?

• Site selection and evaluation
  – Pricing mechanism
  – How profitable a project is going to be?
Future Land Use

• Continuity and change
• Path dependence
• Future Land Use
  – Existing Land Use
  – Planned and Announced Development
  – Model Predictions
Planned and Announced Development

What do we know?
Media Sources

- Houston Chronicle
- Houston Business Journal
- Community Impact Newspaper
- Texas A&M Real estate News
- Real Estate Bisnow
- Bay Area Houston Economic Partnership
- Swamplot
- GlobeSt.com
- City-Data.com
- Local Newspapers
Record size residential project set to rise downtown

40-story high-rise to be the giant of rental property near Market Square

By Nancy Sarnoff

July 14, 2014 | Updated: July 15, 2014 9:31am

A developer plans to break ground next month on what will be downtown's tallest residential tower, a project symbolic of this city's healthy economy and downtown's growing emergence as a place to call home.

The Texas-sized tower is set to rise 40 stories and house 463 apartments built to almost-condominium standards, the developers said Monday.

"It's big," said Jack Lee, president of Oakmont Group, the project manager. "It's bigger than any other downtown Houston high-rise rental property we know of."

### Market Square Tower
- **Units:** 463
- **Floors:** 40
- **Avg. Unit size:** 1,275
- **Avg. Rent:** $3,500
- **Year:** 2017

Courtesy of Woodbranch investments
FMC Technologies breaks ground on campus to consolidate local operations

FMC Technologies Inc. (NYSE: FTI) broke ground on its new campus at Generation Park on May 2.

The Houston-based oil and gas equipment company bought 173 acres at the business park, off the northeast corner of Beltway 8, in late 2012. When it bought the land, the company said it would provide "flexibility and options as it assesses its future needs in the Houston area."

FMC Technologies Inc. (NYSE: FTI) broke ground on its new campus at Generation Park on May 2.

Area: 70 acres
SQFT: 1 million
Jobs: 1,800
Year: 2016
Sienna South
Area: 3,700 acres
Homes: 6,500
Aggregate Home Sales: $2.1 billion
Const. Span: 15 Years
Bridgeland

Total acreage: 11,400
Total lots at build-out: 20,000
Developable acreage: 10,000
Anticipated Build out Year: 2035
Cross Creek Ranch

Total acreage: 3,200
Total Units: 7,200
Anticipated Build out Year: 2025
Springwoods Village

Total acreage: 1,800
Total lots at build-out: 5,000
Developable acreage: 1,620
Exxon Campus

Acreage: 385
Jobs: 10,000
Year: 2015
Pinto Business Park

Acreage: 971
SQFT: 7 mln
( build-to-suit )
Generation Park

Acreage: 4,000
Jobs: 100,000
Office SQFT: 30 mln
Build-out: 35 years
Announced Development

- Springwoods Village (5,000 HU)
- Toll Brothers (900 HU)
- Bridgeland (20,000 HU)
- Tavola (2,000 HU)
- Harmony (2,000 HU)
- Cane Island (2,000 HU)
- The Groves (2,200 HU)
- Cross Creek Ranch (7,200 HU)
- Buffalo Lakes (3,100 HU)
- Harvest Green (2,700 HU)
- Pomona (2,100 HU)
- 50 MF Complexes (15,000 HU)
- Sienna South (6,500 HU)
The Woodlands I
(Hughes Landing, Research Forest Lakeside Buildings, Texas Children’s Hospital)

The Woodlands II
(Anadarko Petroleum, Superblock, Waterway, Woodland Creek)

Exxon Campus
(10,000 jobs)

Bridgeland

Central Park, Energy Center, Shell Oil, Old Exxon Campus Redevelopment

BHP Petroleum, Westcreek Centre, Amegy Bank, Blvd Phase II, AmReit Uptown Park Redevelopment

Springwoods Village
(8 M Office)

Grand Texas, Earth Quest, and Tavola

Generation Park
(4,000 acre)

Pinto Business Park
(971 acres)

Memorial Hermann Expansion
Development in Downtown: Office

**Capitol Tower**
- 34 story, 0.7M, 2017

**6 Houston Center**
- 30 story, 0.6M, 2016

**Chevron**
- 50 story, 1.7M, 2016

**Hines Tower**
- 47 story, 1M, 2017
Development in Downtown: Residential

- Market Square Tower (40 story, 463 units, 2017)
- Market Square Apt (33 story, 289 units, 2016)
- Marquette Land Invest. (28 story, 380 units, 2015)
- 500 Crawford (7 story, 397 units, 2015)
- Planned Res. (6 story, 267 units, 2017)
- Planned Res. (38 story, 300 units, 2018)
- Block 98 Res. (39 story, 314 units, 2017)
- Skyhouse Apt. (24 story, 336 units, 2014)
- Camden Apt. (12 story, 259 units, 2018)
- Camden Apt. (12 story, 259 units, 2016)
- Planned Res. (6 story, 267 units, 2017)
- Allied Orion Apt. (10 story, 302 units, 2016)
- Leon Capital Apt. (220 units, 2016)
Development in Downtown: Hotels

- Aloft Houston Downtown
- Hotel Alessandra
- Hilton Garden Inn (12 story, 230 rooms, 2016)
- Holiday Inn
- Hyatt Place and Hampton Inn
- Marriott Marquis (29 story, 1000 rooms, 2016)
### Summary of Planned Projects

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Housing Units (Thousands)</th>
<th>SQFT (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Condo Residential</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Educational</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Hotel</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Industrial</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Office</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Restaurants</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Retail</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Senior-Living</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Single-Family</td>
<td>164</td>
<td></td>
</tr>
<tr>
<td>Warehouse</td>
<td>35</td>
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</tbody>
</table>
Residential Demand

Projected Annual Change in the Number of Households

Multifamily (30%)

- Multi-Family Complexes
  - Garden Style 50%
  - High-Density 50%

Single-Family (70%)

- Single-Family Subdivisions
  - 7-75 Units 5%
  - 76-150 Units 20%
  - 151-225 Units 25%
  - 226-300 Units 25%
  - 301-500 Units 25%
Non-Residential Demand

1. Projected Annual Change in Jobs by Sector (NAICS-2)
2. Convert Sectors to Building Types
3. Apply SQFT per Job by Building Type
4. Annual Demand for New SQFT by Building Type
5. Projects by Type and Size
Model Predictions

Where to build?
Generating Development Proposals

1. Pick a parcel (if (re)development allowed)
2. Determine what can be developed on it (all possible options)
3. Estimate Total Cost (Land + Construction)
4. Estimate Expected Sale Price and ROI
5. Continue until no parcels left
Proposal Selection

Select a proposal (based on ROI)

“Build” a project

Reduce demand targets

Continue until demand is met
Expected Sale Price

• What is the market value of a specific project in a specific place?
• Use existing data to test how different factors affect valuations
• Factors
  – Accessibility to jobs and housing
  – Proximity to arterials and highways
  – Recent development activity
  – Building characteristics
Jobs

2010

2040
Future Directions

- Household Housing Choices
- “Pro forma”
- 3D visualization
Development Options

Option 1. Multi-Family Apartment

Option 2. Office Complex

Option 3. Mixed-Use Development

Proposed Redevelopment Site
Option 1. Multi-Family Apartment

Pro Forma

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area (SF)</td>
<td>462,000 SF (10 Acre)</td>
</tr>
<tr>
<td>Units/Building Gross SF</td>
<td>590 units/708,000 SF</td>
</tr>
<tr>
<td>Annual Gross Potential Income ($)</td>
<td>12 Million</td>
</tr>
<tr>
<td>Operating Income ($)</td>
<td>4 Million</td>
</tr>
<tr>
<td>Total Building Hard Costs ($)</td>
<td>31 Million</td>
</tr>
<tr>
<td>Total Development Budget ($)</td>
<td>57 Million</td>
</tr>
<tr>
<td>Project Return on Cost (ROC)</td>
<td>7.12 %</td>
</tr>
</tbody>
</table>
### Option 2. Office Complex

<table>
<thead>
<tr>
<th>Pro Forma</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Land Area (SF)</td>
<td>462,000 SF (10 Acre)</td>
</tr>
<tr>
<td>Units/Building Gross SF</td>
<td>100,000 SF</td>
</tr>
<tr>
<td>Annual Gross Potential Income ($)</td>
<td>27 Million</td>
</tr>
<tr>
<td>Operating Income ($)</td>
<td>19 Million</td>
</tr>
<tr>
<td>Total Building Hard Costs ($)</td>
<td>105 Million</td>
</tr>
<tr>
<td>Total Development Budget ($)</td>
<td>187 Million</td>
</tr>
<tr>
<td><strong>Project Return on Cost (ROC)</strong></td>
<td><strong>10.41 %</strong></td>
</tr>
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Option 3. Mixed-Use Development

Pro Forma

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area (SF)</td>
<td>390,000 SF (9 Acre)</td>
</tr>
<tr>
<td>Units/Building Gross SF</td>
<td>MF: 463 units/558,000 SF</td>
</tr>
<tr>
<td>Retail</td>
<td>Retail: 124,000 SF</td>
</tr>
<tr>
<td>Annual Gross Potential Income ($)</td>
<td>14 Million</td>
</tr>
<tr>
<td>Operating Income ($)</td>
<td>7 Million</td>
</tr>
<tr>
<td>Total Building Hard Costs ($)</td>
<td>42 Million</td>
</tr>
<tr>
<td>Total Development Budget ($)</td>
<td>84 Million</td>
</tr>
<tr>
<td><strong>Project Return on Cost (ROC)</strong></td>
<td><strong>8.36 %</strong></td>
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</table>
Forecast as a Continuous Process

• Quarterly Releases
  – January, April, July, October

• Each release includes
  – New information
  – Corrections based on review
  – Model improvements
Land Use – Population Link

- Population and employment are tied to land use (parcels and buildings)
- Population and/or employment forecasts cannot be changed without changing the underlying land use
Review

• Your feedback is extremely valuable
• Factual mistakes (data errors) will be corrected as a matter of course
• Other comments will be thoroughly reviewed and addressed properly
• RLUIS
  – Regional Land Use Information System
www.h-gac.com/forecast
forecast@h-gac.com
Part III: Accessing Data and Providing Feedback

www.h-gac.com/forecast
2040 Regional Growth Forecast

Contact Us
forecast@h-gac.com

Links
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Forecast

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H-GAC News & Events
Pilot Program Community input Meeting to be Held
Posted: 07/16/2014

Census Update
Posted: 07/02/2014

Cypress Creek Parkway Livable Centers Study
Posted: 07/01/2014
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Forecast

Spotlight on the Regional Growth Forecast
August 1, 2014
8:30 a.m. to Noon
at H-GAC

Includes population, employment, and transportation Analysis Zones (2003 Data) in Galveston, Harris, Liberty.

General public every quarter. Each new release is current through the

Submit Feedback
Sign up for Forecast News

H-GAC News & Events
Pilot Program Community input Meeting to be Held
Posted: 07/16/2014

Census Update
Posted: 07/22/2014

Cypress Creek Parkway Livable Centers Study
Posted: 07/01/2014
More Users ➔ More Feedback ➔ Better Forecast

Questions?

www.h-gac.com/forecast