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Reviewing the Strategies
for Natural Gas

# National Grid
# Damage Prevention on Gas Distribution Assets in the US

**Diane Benedetto, Manager of Damage Prevention**

**IGU World Gas Conference**
**October 5-9, 2009**
**Buenos Aires, Argentina**

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# IGU World Conference Languages

| Country | Official or Primary Language |
|---|---|
| Algeria | Arabic |
| Argentina | Spanish |
| Austria | German |
| Belgium | Dutch |
| Bolivia | Spanish |
| Brazil | Portugese |
| Canada | English, French |
| China | Chinese |
| Colombia | Spanish |
| Czech Republic | Czech |
| Denmark | Danish |
| Egypt | Arabic |
| France | French |
| Germany | German |
| India | Hindi |
| Indonesia | Indonesian |
| Iran | Persian |
| Israel | Hebrew |
| Italy | Italian |
| Japan | Japanese |
| Kuwait | Arabic |

| Country | Official or Primary Language |
|---|---|
| Malaysia | Malay |
| Mexico | Spanish |
| Netherlands | Dutch |
| Norway | Norwegian |
| Peru | Spanish |
| Poland | Polish |
| Qatar | Arabic |
| Republic of Yemen | Arabic |
| Romania | Romanian |
| Russia | Russian |
| Singapore | English |
| Slovakia | Slovak |
| South Korea | Korean |
| Switzerland | German |
| Ukraine | Ukranian |
| United Kingdom | English |
| Uruguay | Spanish |
| USA | English |
| Vietnam | Vietnamese |
| Wales | Welsh |

# GOOD MORNING!

صباح الخير!

Доброе утро!

Dobré ráno!

Goedemorgen!

Dzień dobry!

Bună dimineața!

Selamat pagi!

Buenos Dias!

早上好！

Bore da!

Доброго ранку!

Chào buổi sáng!

おはようございます！

Bom dia!

सुप्रभात!

صبح بخير!

안녕하세요!

Bonjour!

Guten Morgen!

Buon giorno!

בוקר טוב!

Godmorgen!

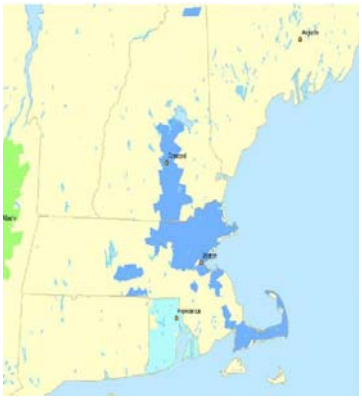


# Agenda

- Background, National Grid US Gas Distribution
  - Network & Customer Base
  - Damage Prevention Management Structure
- Damage Prevention Responsibilities
- Differences
- Statistics
- Current Damage Reduction Strategy
- Future Damage Reduction Strategy

# New England Gas Customer Base

- Covers Massachusetts, New Hampshire & Rhode Island
- 15,095 miles (24,293 km) of distribution and transmission pipeline
- 1,165,000 customers



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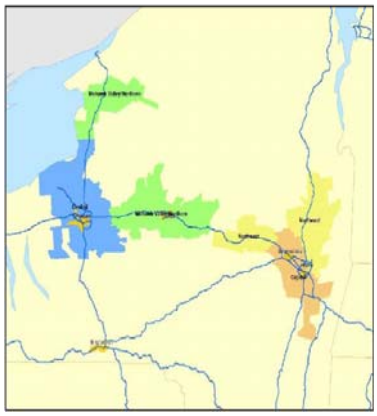
# Downstate Gas Customer Base

- Covers 2 main geographic areas totaling 1,328 square miles (2,137 square km):
  - Long Island
  - Parts of NYC
- 11,400 miles (18,347 km) of distribution and transmission pipeline
- 1,620,000 customers

# Upstate NY Gas Customer Base

- Covers 4 main geographic areas totaling 5,350 square miles (8,610 square km):
  - Central
  - Mohawk Valley/Northern
  - Capital
  - Northeast
- 8,715 miles (14,025) of distribution and transmission pipeline
- 570,000 customers



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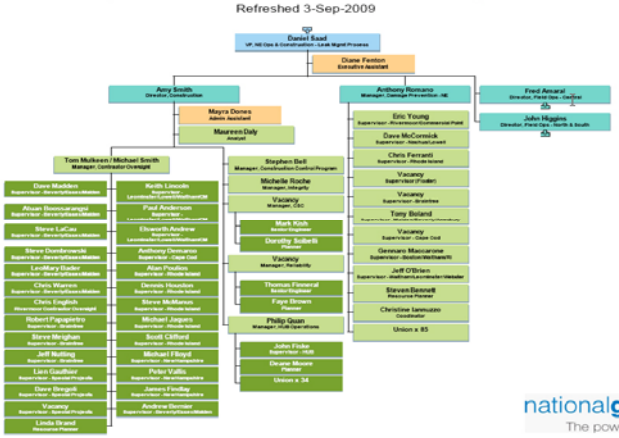
# New England Management Structure

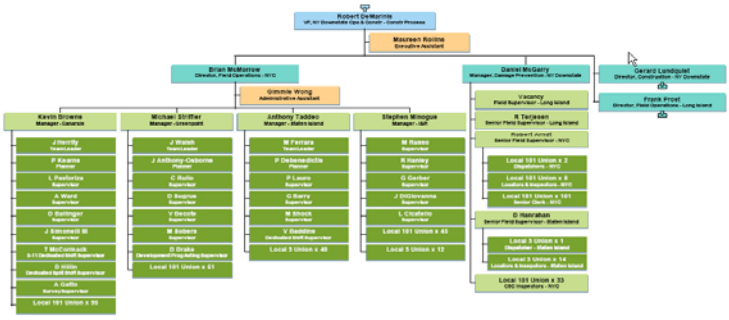



nationalgrid
The power of action.

# Downstate NY Management Structure

## US GD - Ops & Constr, NY Downstate - Constr Process

Refreshed 3-Sep-2009



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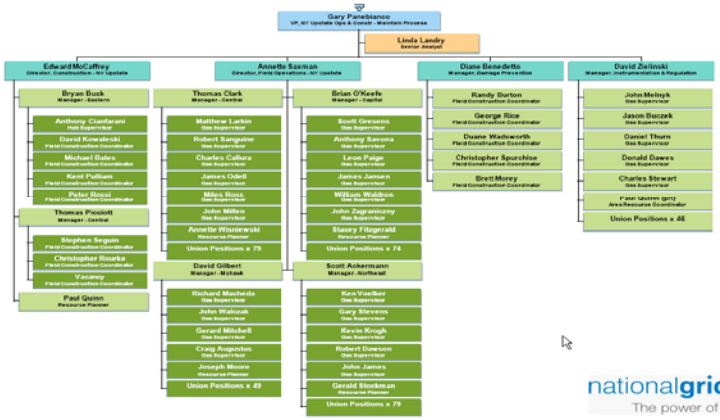
# Upstate NY Management Structure

## US GD - Ops & Constr, NY Upstate - Maintain Process

Refreshed 3-Sep-2009



# Responsibilities of Damage Prevention

- Responding to tickets from the one call centers and marking out our underground infrastructure
- Responding to third party excavation damages & determining root cause
- Determining cast iron encroachments
- On site presence during blasting activity
- Responding to High Profile tickets (critical facilities)
- Improving service & mapping records
- Participating in Public Awareness and Education (Federal code)
- Participating in Excavator Education (partnering with one call centers)
- On site excavator counseling

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# We are different…

| | UPSTATE | NEW ENGLAND | | | DOWNSTATE | | |
|---|---|---|---|---|---|---|---|
| **Particulars** | **Upstate NY** | **Massachusetts** | **New Hampshire** | **Rhode Island** | **Brooklyn/Queens** | **Long Island** | **Staten Island** |
| **Ticket Management Process** | | | | | | | |
| Ticket generation provider | Dig Safely NY (DSNY) | Dig Safe | Dig Safe | Dig Safe | NYC One Call | NYC One Call | NYC One Call |
| Outsourced | Premier | Inhouse | Inhouse | Inhouse | Inhouse/ ELS | Inhouse/ ELS | Inhouse |
| % outsourced | 100 | 0 | 0 | 0 | 50 | 5/95% | 100 |
| Response time to ticket (hours) | 48 | 72 | 72 | 48 | 48 | 48 | 48 |
| Extension/Delay of ticket permitted (as per law) | Yes | No | No | No | Yes | Yes | Yes |
| Work Management System | STORMS | Maximo | Maximo | N/A | Maximo | Maximo | Maximo |
| **Ticket Description** | | | | | | | |
| Area (Distance) for one Ticket | 300' linear; 50' all directions (intersection) | No Boundaries | No Boundaries | No Boundaries | One Block | One Block | One Block |
| % of re-mark tickets | 16% | n/a | n/a | n/a | n/a | n/a | n/a |
| % of ongoing tickets/ delayed tickets | 10% | n/a | n/a | n/a | 10% | 18% | 8% |
| % of tickets with Damage at site | 0.22% | 0.02% | 0.08% | 0.01% | 0.49% | 0.53% | 0.49% |
| % of tickets with No Damage at site | 99.78% | 99.98% | 99.92% | 99.99% | 99.51% | 99.47% | 99.51% |
| **Software/applications** | | | | | | | |
| Ticket management system | Tel dig | Advantex | Advantex | Advantex | Irthnet | Irthnet | Irthnet |
| Historical data/maps | CASCAR/GIS | ArcFM | ArcFM | Small World | NRG | NRG | NRG |
| Field equipment used | Paper/Laptop | FDC | FDC | Laptop | Paper | Lap Top | Paper |
| **Sub Processes** | | | | | | | |
| Ticket Requested | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Ticket management system Outage | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Design ticket | Yes | No | No | No | Yes | Yes | Yes |
| Pre Demolition | Yes | No | No | No | No | No | No |
| Problem Locate | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Damage Deficiency | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Gas Regulator station | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Gas transmission lines | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cast Iron 1 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cast Iron 2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Legal Implications** | | | | | | | |
| Laws Applicable(State Laws) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Laws Applicable(Federal Laws) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Violation Penalty of Damage caused | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Premark Requirement | No | Yes | Yes | No | No | No | No |
| Home owner exempted from call | Yes | No | No | No | Yes | Yes | Yes |

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# …very different!

| | UPSTATE | NEW ENGLAND | | | DOWNSTATE | | |
|---|---|---|---|---|---|---|---|
| **Particulars** | **Upstate NY** | **Massachusetts** | **New Hampshire** | **Rhode Island** | **Brooklyn/Queens** | **Long Island** | **Staten Island** |
| **Locator Details** | | | | | | | |
| Locating device | Metrotech; Verifier; Sure Lock | Metrotech 810 DX | Metrotech 810 DX | Metrotech 810 DX | Metrotech 810 DX | Metrotech 810 DX | Metrotech 810 DX |
| **Training** | | | | | | | |
| Methods of educating public about Damage Prevention process | Contractor meetings, Presentations, Bill Stuffers | public awareness / MUST | public awareness / MUST | public awareness / MUST | Contractor meetings | Contractor meetings | Contractor meetings |
| Frequency of Locator training (No. of hrs/ year) | | 3 day initial training/ 1 day refresher training every 2 yrs | 3 day initial training/ 1 day refresher training every 2 yrs | 3 day initial training/ 1 day refresher training every 2 yrs | Done every two years with Operator Quals | Done every two years with Operator Quals | Done every two years with Operator Quals |
| **Performance Measurement** | | | | | | | |
| How is Locator's performance assessed? | Audits | Audits | Audits | Audits | Audits | Audits | Audits |
| How is Supervisor's Performance assessed? | Unit Costs, Downward trend in Damages | Damages / Locator Errors / Violations | Damages / Locator Errors / Violations | Damages / Locator Errors / Violations | Unit costs, Damages | Unit costs, Damages | Unit costs, Damages |
| Standard procedures set for performance? | Damages per 1000 mark outs | Damages per 1000 mark outs | Damages per 1000 mark outs | Damages per 1000 mark outs | Damages per 1000 mark outs | Damages per 1000 mark outs | Damages per 1000 mark outs |
| Any procedures set for standard time to be taken for particular category of locating job? | No | Yes | Yes | Yes | Yes | No | Yes |
| Any mechanism for tracking errors by locators? | Field Locator audits; damage investigations | Yes | Yes | Yes | Audits and Contractor feedback | Audits and Contractor feedback | Audits and Contractor feedback |
| **Other** | | | | | | | |
| Number of warnings given to locators for repeating critical errors? | Within the month following a damage | one | one | one | None 3 days off for first violation | None 3 days off for first violation | None 3 days off for first violation |
| Name of Unions associated | N/A | 12003, 12012, 318, 310, 12431 | 12003, 12012, 318, 310, 12431 | 12003, 12012, 318, 310, 12431 | | 1049 | |
| Losses/ Penalty faced due to mismark/ error in marking (in $) | Price of damage | Price of Damage | Price of Damage | Price of Damage | Price of Damage | Price of Damage | Price of Damage |
| **Acronyms** | | | | | | | |
| Locator position name | Locator | District Inspector | District Inspector | Facility Locator / Linewalker | Inspector | Highway man | Inspector |
| Field Construction Coordinator | FCC | Field Supervisor | Field Supervisor | Field Supervisor | Field Supervisor | Field Supervisor | Field Supervisor |
| High Profile ticket | HP | n/a | n/a | n/a | HP | HP | HP |
| Meter & Test | M&T | n/a | n/a | n/a | Corrosion | Integrity group | Corrosion |
| Operations & Maintenance | O&M | O&M | O&M | O&M | O&M | O&M | O&M |
| Third Party | TP | TP | TP | TP | Third Party | Third Party | Third Party |
| Test Station | TS | TS | TS | TS | Test Box | Test Box/Anode | Test Box |
| Work Request | WR | Work Order | Work Order | Work Order | Work order/ Speed letter | Work order | Work order/ Speed letter |
| Vault Notification | VN | n/a | n/a | n/a | N/A | N/A | N/A |


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# Ticket Volumes & Damage Statistics

**National Grid Damage Prevention - GAS**
**System Damages YTD 2008 (calendar year)**
**December 2008**

| | DOWNSTATE | | | NEW ENGLAND | | | | UPSTATE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | NYC | LI | TOTAL | MA | NH | RI | TOTAL | UPSTATE GAS | TOTAL | SYSTEM |
| **Ticket Counts (normalized)** | | | | | | | | | | |
| YTD December 2008 | 87,895 | 119,216 | 207,111 | 194,883 | 20,066 | 54,380 | 269,328 | 98,434 | 98,434 | 574,873 |
| YTD December 2007 | 75,164 | 105,488 | 180,652 | 199,628 | 20,262 | 55,477 | 275,367 | 99,743 | 99,743 | 555,762 |
| % change | 0.17 | 0.13 | 0.15 | (0.02) | (0.01) | (0.02) | (0.02) | (0.01) | (0.01) | 0.03 |
| December 2008 | 7,050 | 6,870 | 13,920 | 9,532 | 793 | 2,897 | 13,229 | 4,230 | 4,230 | 31,388 |
| December 2007 | 4,893 | 6,328 | 11,221 | 7,842 | 669 | 2,883 | 11,394 | 3,305 | 3,305 | 25,920 |
| % change | 0.44 | 0.09 | 0.24 | 0.22 | 0.19 | 0.00 | 0.16 | 0.28 | 0.28 | 0.21 |
| **System Wide Damages (includes hand digs)** | | | | | | | | | | |
| YTD December 2008 - RATIO | 3.53 | 4.00 | 3.80 | 3.28 | 2.74 | 2.96 | 3.17 | 4.74 | 4.74 | 3.67 |
| YTD December 2007 - RATIO | 4.90 | 5.20 | 5.08 | 4.00 | 3.16 | 3.91 | 3.99 | 5.80 | 5.80 | 4.67 |
| % change | (0.28) | (0.23) | (0.25) | (0.20) | (0.13) | (0.24) | (0.20) | (0.18) | (0.18) | (0.21) |
| YTD December 2008 | 310 | 477 | 787 | 639 | 55 | 161 | 855 | 467 | 467 | 2,109 |
| YTD December 2007 | 368 | 549 | 917 | 817 | 64 | 217 | 1,098 | 579 | 579 | 2,594 |
| % change | (0.16) | (0.13) | (0.14) | (0.22) | (0.14) | (0.26) | (0.22) | (0.19) | (0.19) | (0.19) |
| December 2008 | 21 | 24 | 45 | 28 | 2 | 10 | 40 | 10 | 10 | 95 |
| December 2007 | 24 | 27 | 51 | 31 | 2 | 9 | 42 | 15 | 15 | 108 |
| % change | (0.13) | (0.11) | (0.12) | (0.10) | 0.00 | 0.11 | (0.05) | (0.33) | (0.33) | (0.12) |
| **Mismark - All** | | | | | | | | | | |
| YTD December 2008 - RATIO | 0.59 | 0.68 | 0.64 | 0.81 | 0.80 | 1.36 | 0.92 | 0.58 | 0.58 | 0.76 |
| YTD December 2007 - RATIO | 0.92 | 0.70 | 0.79 | 1.31 | 0.64 | 1.51 | 1.30 | 0.95 | 0.95 | 1.07 |
| % change | (0.36) | (0.03) | (0.19) | (0.38) | 0.24 | (0.10) | (0.29) | (0.39) | (0.39) | (0.29) |
| YTD December 2008 | 52 | 81 | 133 | 158 | 16 | 74 | 248 | 57 | 57 | 438 |
| YTD December 2007 | 69 | 74 | 143 | 262 | 13 | 84 | 359 | 95 | 95 | 597 |
| % change | (0.25) | 0.09 | (0.07) | (0.40) | 0.23 | (0.12) | (0.31) | (0.40) | (0.40) | (0.27) |
| December 2008 | 4 | 6 | 10 | 5 | - | 7 | 12 | 3 | 3 | 25 |
| December 2007 | 2 | 5 | 7 | 6 | - | 6 | 12 | 4 | 4 | 23 |
| % change | 1.00 | 0.20 | 0.43 | (0.17) | - | 1.00 | 0.17 | 0.00 | (0.25) | 0.09 |
| **Company/Contractor** | | | | | | | | | | |
| YTD December 2008 - RATIO | 0.03 | 0.07 | 0.05 | 0.06 | 0.20 | 0.07 | 0.07 | 0.11 | 0.11 | 0.07 |
| YTD December 2007 - RATIO | 0.12 | 0.05 | 0.08 | 0.09 | 0.38 | 0.18 | 0.13 | 0.07 | 0.07 | 0.10 |
| % change | (0.71) | 0.42 | (0.31) | (0.34) | (0.50) | (0.59) | (0.44) | 0.59 | 0.59 | (0.29) |
| YTD December 2008 | 3 | 8 | 11 | 11 | 4 | 4 | 19 | 11 | 11 | 41 |
| YTD December 2007 | 9 | 5 | 14 | 17 | 8 | 10 | 35 | 7 | 7 | 56 |
| % change | (0.67) | 0.60 | (0.21) | (0.35) | (0.50) | (0.60) | (0.46) | 0.57 | 0.57 | (0.27) |
| December 2008 | - | 2 | 2 | - | - | - | - | - | - | 2 |
| December 2007 | 1 | - | 1 | - | 1 | - | 1 | - | - | 2 |
| % change | 0.00 | 1.00 | 1.00 | 0.00 | (1.00) | 0.00 | (1.00) | 1.00 | 1.00 | 0.00 |
| **Excavator Error** | | | | | | | | | | |
| YTD December 2008 - RATIO | 2.29 | 0.96 | 1.25 | 1.66 | 1.15 | 0.92 | 1.47 | 2.30 | 2.30 | 1.53 |
| YTD December 2007 - RATIO | 3.27 | 1.05 | 1.55 | 1.91 | 1.58 | 1.19 | 1.74 | 2.77 | 2.77 | 1.86 |
| % change | (0.30) | (0.08) | (0.20) | (0.13) | (0.27) | (0.23) | (0.15) | (0.17) | (0.17) | (0.18) |
| YTD December 2008 | 143 | 115 | 258 | 324 | 23 | 50 | 397 | 226 | 226 | 881 |
| YTD December 2007 | 169 | 111 | 280 | 382 | 32 | 66 | 480 | 276 | 276 | 1,036 |
| % change | (0.15) | 0.04 | (0.08) | (0.15) | (0.28) | (0.24) | (0.17) | (0.18) | (0.18) | (0.15) |
| December 2008 | 7 | 7 | 14 | 16 | 2 | 3 | 21 | 4 | 4 | 39 |
| December 2007 | 13 | 7 | 20 | 16 | 1 | 2 | 21 | 6 | 6 | 47 |
| % change | (0.46) | 0.00 | (0.30) | (0.11) | 1.00 | 0.50 | 0.00 | (0.33) | (0.33) | (0.17) |

# Current Damage Reduction Strategy

- Closer supervision of locating staff
- Enhanced and continual training of locating staff
- Use of NGRID retirees (retired gas supervisors)
- Revised (& standardized) problem locate procedure
- Enhanced excavator & public awareness messages
- Cable Avoidance Tool ("CAT")
- Damage trending analysis (by region, material & size of facility, excavator name, etc.)
- On site excavator counseling (impromptu visits and post damage visits)
- Proactive engineering of work; preconstruction meetings
- Attention to & correction of facility records
- Annual Regulatory Reporting and close monitoring of performance
- Regulatory Fines

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# Current Damage Reduction Strategy
## (Available Tools to Enhance Current Strategy)

- Root Cause Standardization (www.commongroundalliance.com)
- Third party damage reporting, at 3 levels
- Timely billing of third party damages and collection activity
- Public awareness campaigns
  - awareness of 811, the federally-mandated, nationwide "Call Before You Dig" number, designed to eliminate confusion over multiple "Call Before You Dig" numbers
  - effectiveness of damage prevention messages on our website (www.nationalgridus.com)
- Data/record clean up

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# Future Damage Reduction Strategies

## (& Damage Prevention Program Enhancements)

- Technology Strategy
- Data/record clean up (GPS coordinates)
- Ticket Management System Consolidation
- Public Awareness Messages (online, fleet) & budget
- Other Technologies for utility locations: GPR, Electromagnetics, Seismic, GPS White Lining, Others?
- R&D--Colored Sand; Electronic Monitoring (cameras)
- Standardized Damage Prevention Organization/Structure
- Nationwide Benchmarking through AGA
- Worldwide Benchmarking through IGU

811
Know what's **below.**
**Call** before you dig.

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# Final Thoughts

- Senior Leadership's Goals:
  - DON'T KILL ANYONE (i.e., Safety Comes First)
  - SPEND OUR MONEY WISELY (i.e., Make Budget)
- My Goals:
  - DON'T STOP BELIEVING (i.e., continuously improve to make a difference)
  - DO THE RIGHT THING (i.e., make sure you can go to sleep at night)

*because*

"Sorry seems to be
the hardest word"

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## Questions or Comments?

**Thank you!!!**