APPENDIX D
Collated U.S. Survey Results

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for

NCHRP PROJECT 20-05, Synthesis Topic 40-04: Utility Location & Highway Design

Friday, January 15, 2010
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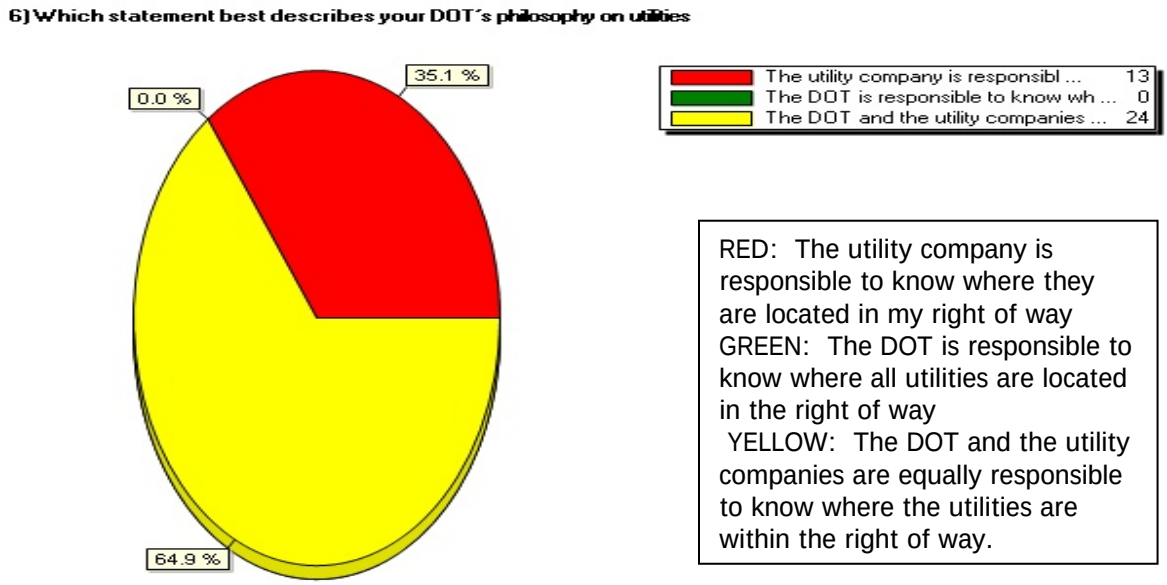
Executive Summary

This report contains a detailed statistical analysis of the results to the survey titled *Copy of NCHRP PROJECT 20-05, Synthesis Topic 40-04: Utility Location & Highway Design* . The results analysis includes answers from all respondents who took the survey in the 80 day period from Monday, February 02, 2009 to Thursday, April 23, 2009. Thirty- Seven (37) completed responses were received to the survey during this time.

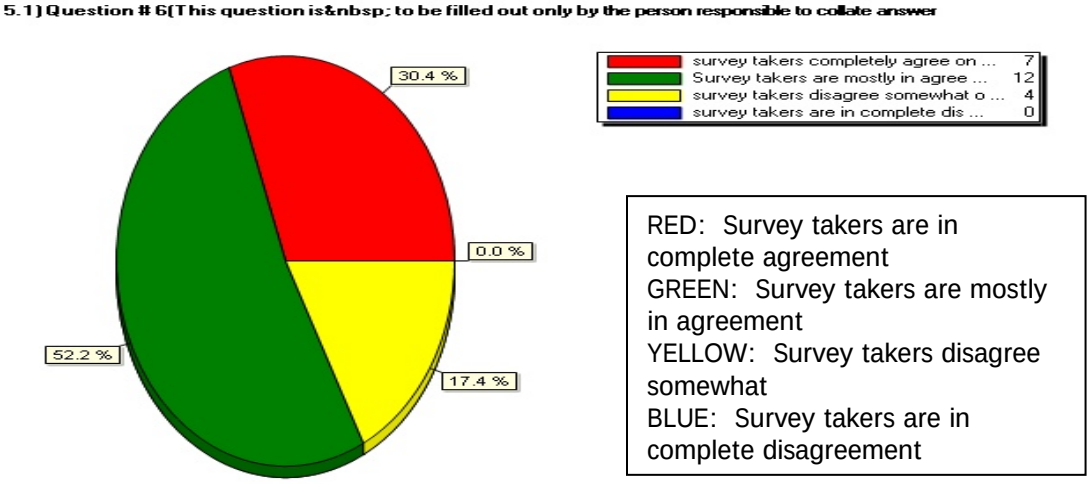
Questions 1-5 were specific to individual state DOTs and are not part of this collated report

6) Which statement best describes your DOT's philosophy on utilities? The official DOT response was:



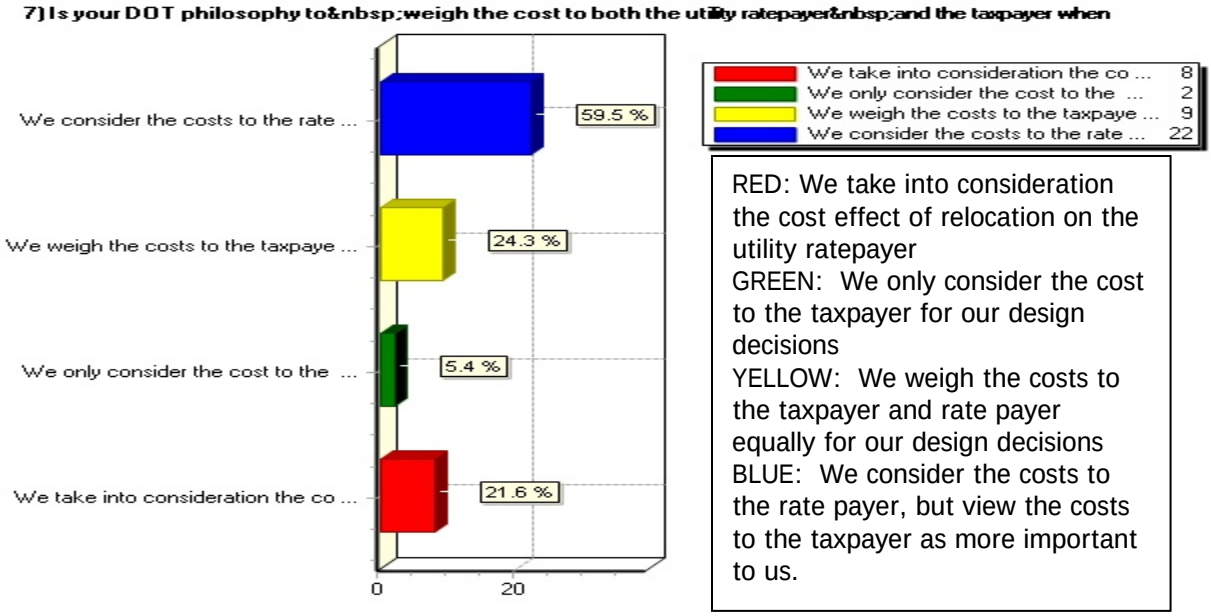
RED: The utility company is responsible to know where they are located in my right of way
GREEN: The DOT is responsible to know where all utilities are located in the right of way
YELLOW: The DOT and the utility companies are equally responsible to know where the utilities are within the right of way.

However, within the DOT there was the following diversity of opinion to the official response.



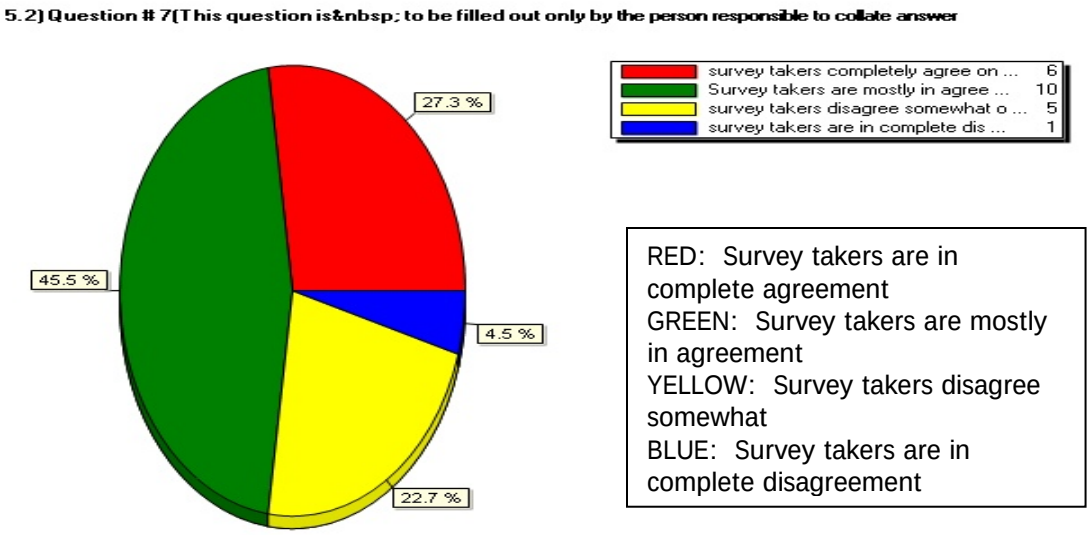
RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

7) Is your DOT philosophy to weigh the cost to both the utility ratepayer and the taxpayer when considering whether to design around or move utilities? (Mark all answers that apply.)
The official DOT response was:



RED: We take into consideration the cost effect of relocation on the utility ratepayer
GREEN: We only consider the cost to the taxpayer for our design decisions
YELLOW: We weigh the costs to the taxpayer and rate payer equally for our design decisions
BLUE: We consider the costs to the rate payer, but view the costs to the taxpayer as more important to us.

However, within the DOT there was the following diversity of opinion to the official response.



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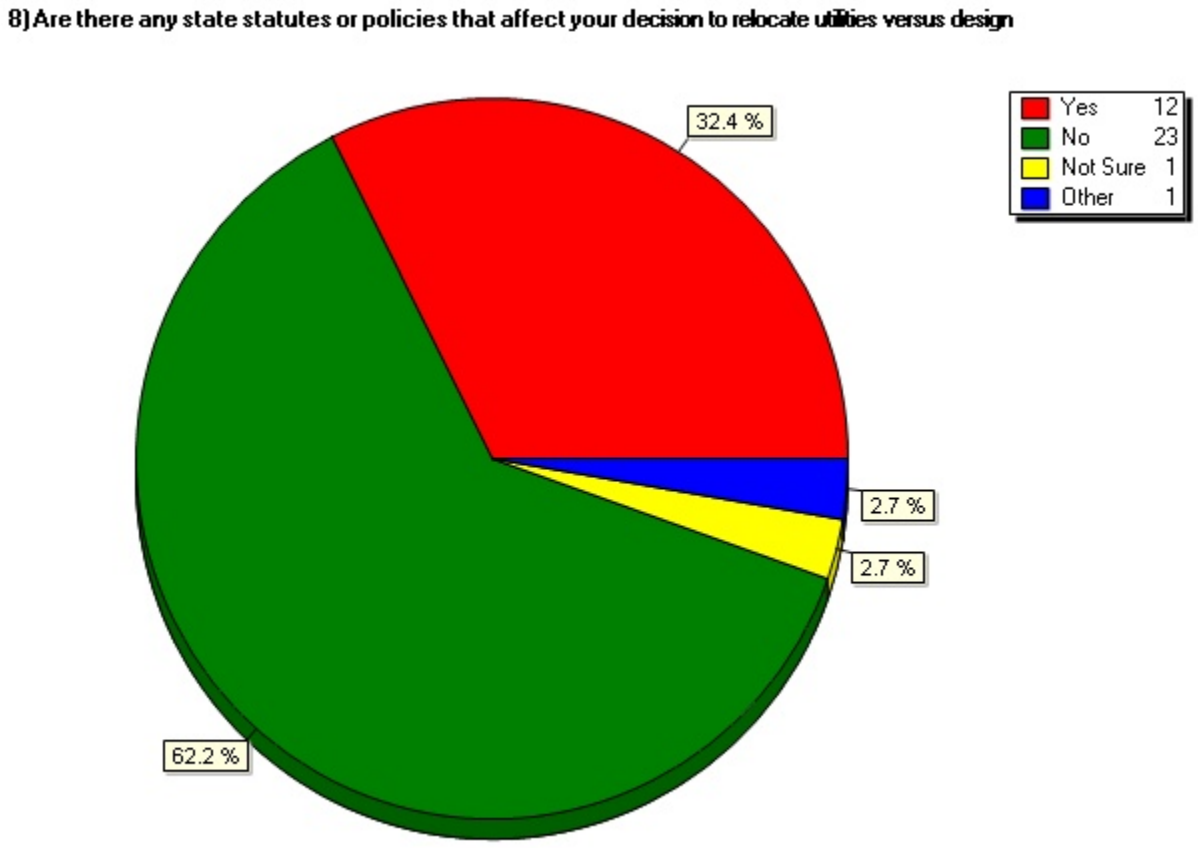
8) Are there any state statutes or policies that affect your decision to relocate utilities versus design around utility conflicts? If yes, please give a brief description in the "Other" section.

The official DOT response was:

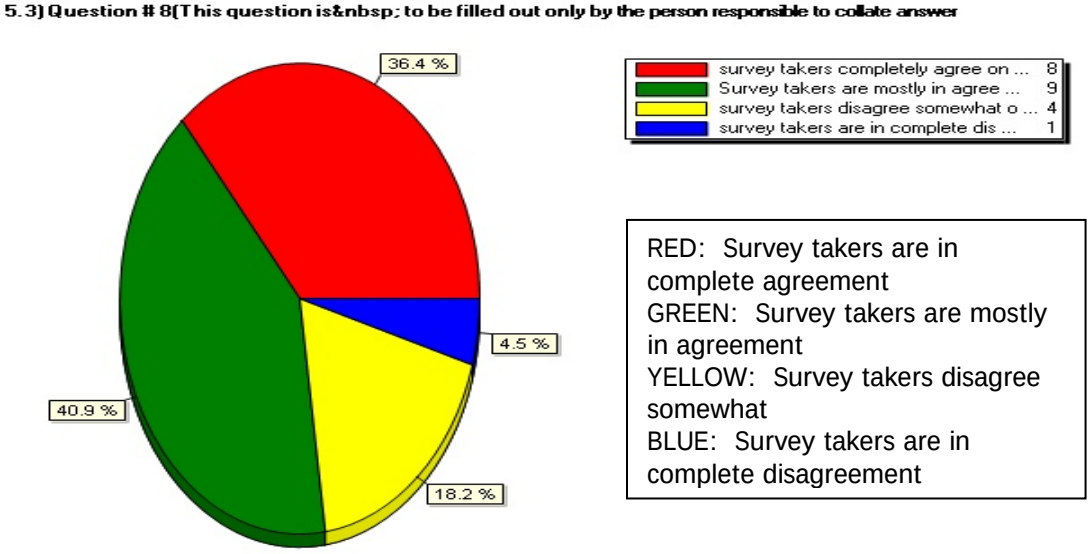


Other Responses:

We are required to pay for municipally owned relocations.
Clear zone issues
Policy to avoid utility facilities whenever possible.
manual, practical design, varied guidance documents
We are working on a Public Interest Determination Policy that would most likely influence or change this answer
MDOT policy requires to pay for municipal utility relocation costs, not privately owned public.
It is our policy to design around utilities as practicable, insofar as this does not add to the cost borne by the state.

If the utility is located in accordance with the utility permit, the costs to relocate/adjust the facilities in conflict are generally a project cost per state statute.
if the state is required to bear the cost of the adjustment, it is easier to proceed with the first choice of highway design without as mush consideration of the utility's ability to pay for the adjustment..

However, within the DOT there was the following diversity of opinion to the official response.



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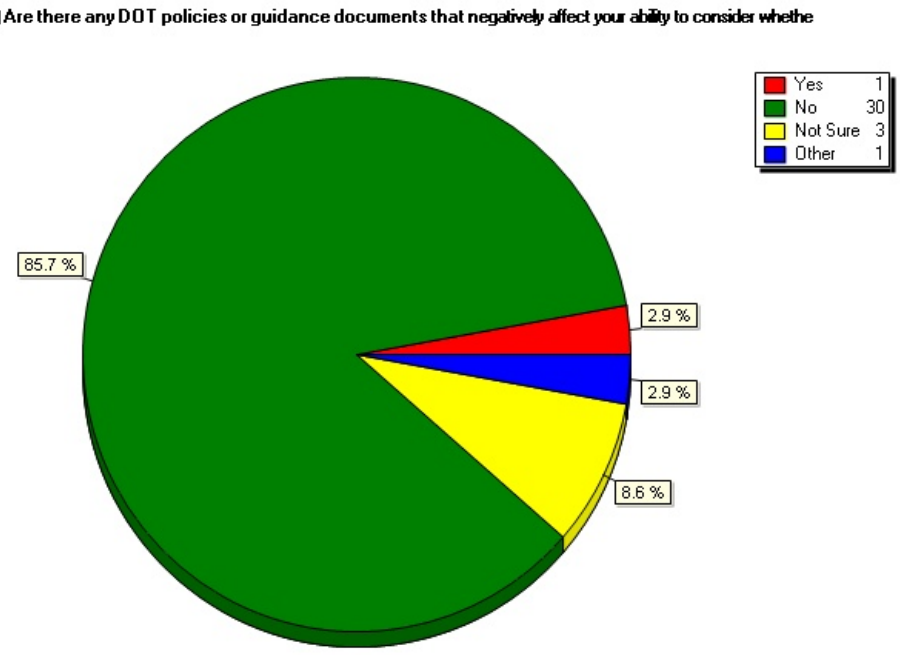
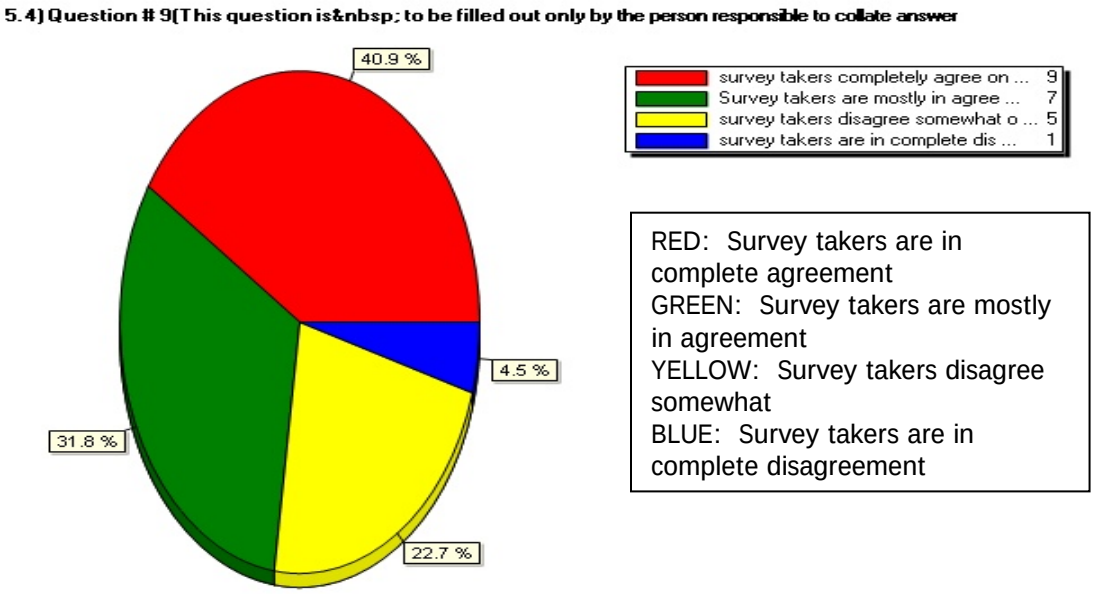
9) Are there any DOT policies or guidance documents that negatively affect your ability to consider whether to relocate utilities or design around them? If "yes" please give a brief description in the "Other" section.
The official DOT response was:



Other Responses:

No. More of a scheduled letting deadline which restricts time to investigate and redesign to avoid utility conflicts identified in utility coordination (ROW plans Issuance) stage.
Municipal undergrounding ordinances come into play when more than 5 spans are involved.

However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
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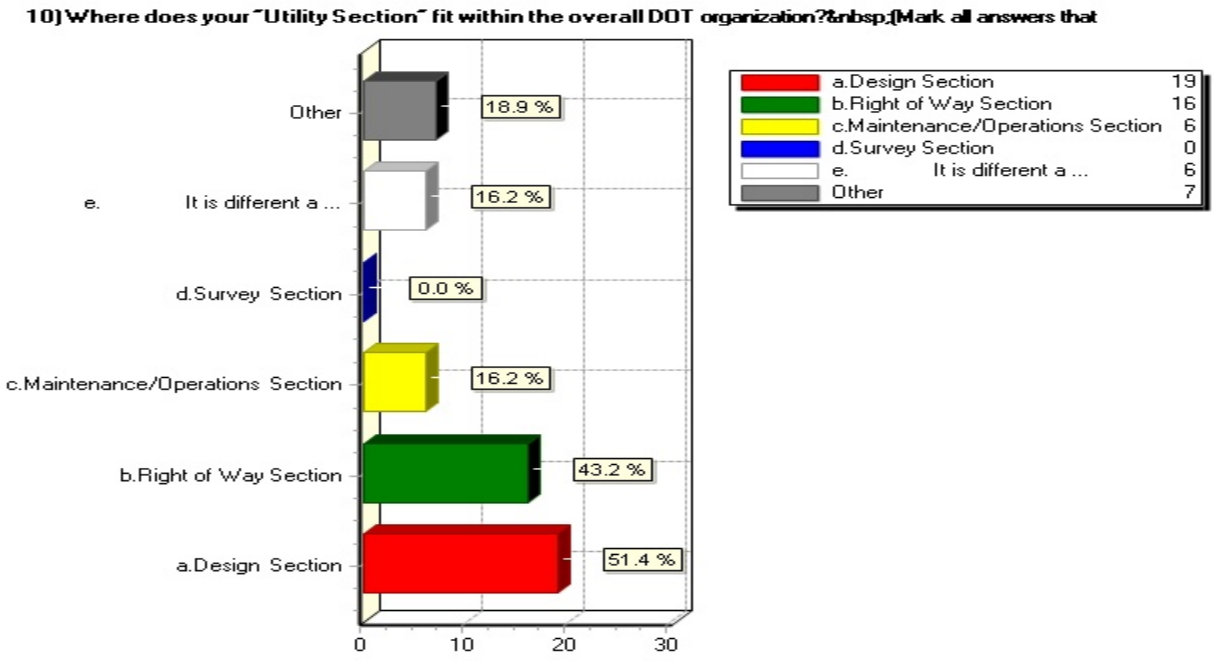
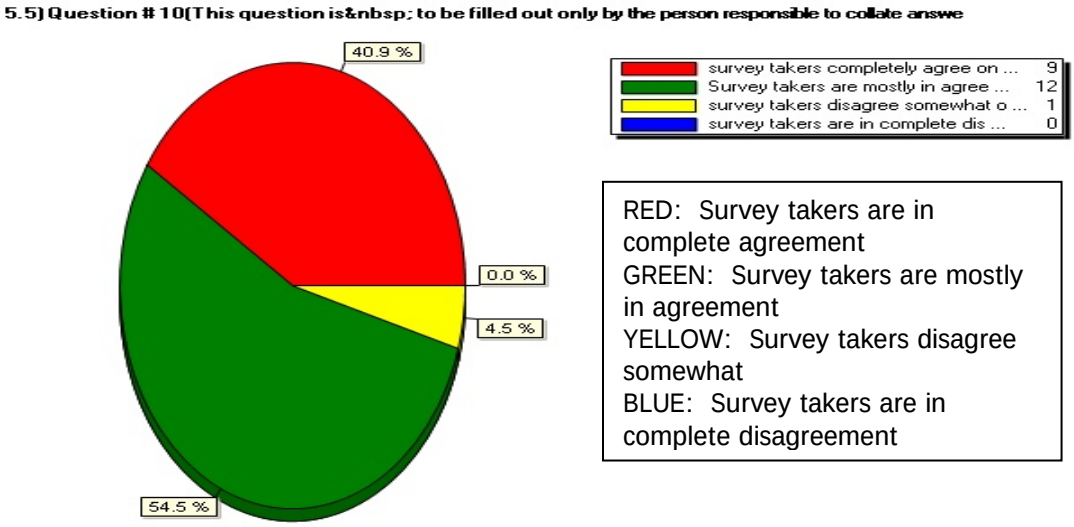
10) Where does your "Utility Section" fit within the overall DOT organization? (Mark all answers that apply.)
The official DOT response was:



Other Responses:

Utility Engineering Group
Technical Services Section
central office-r/w, distr-project develo
Project Management
Program Development-design & Planning
Planning and Project Development
part of ROW or stand alone -by region

However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
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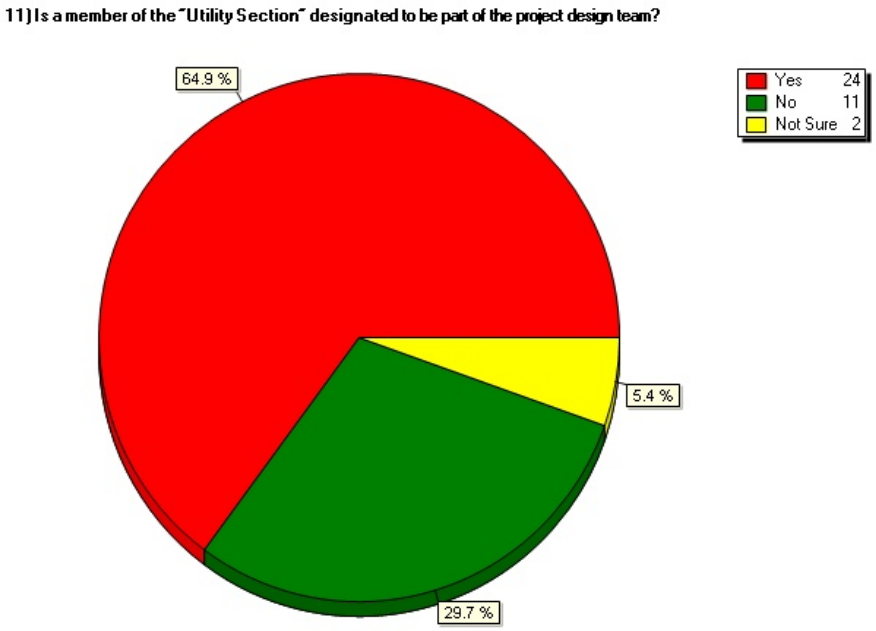
11) Is a member of the "Utility Section" designated to be part of the project design team?
The official DOT response was:



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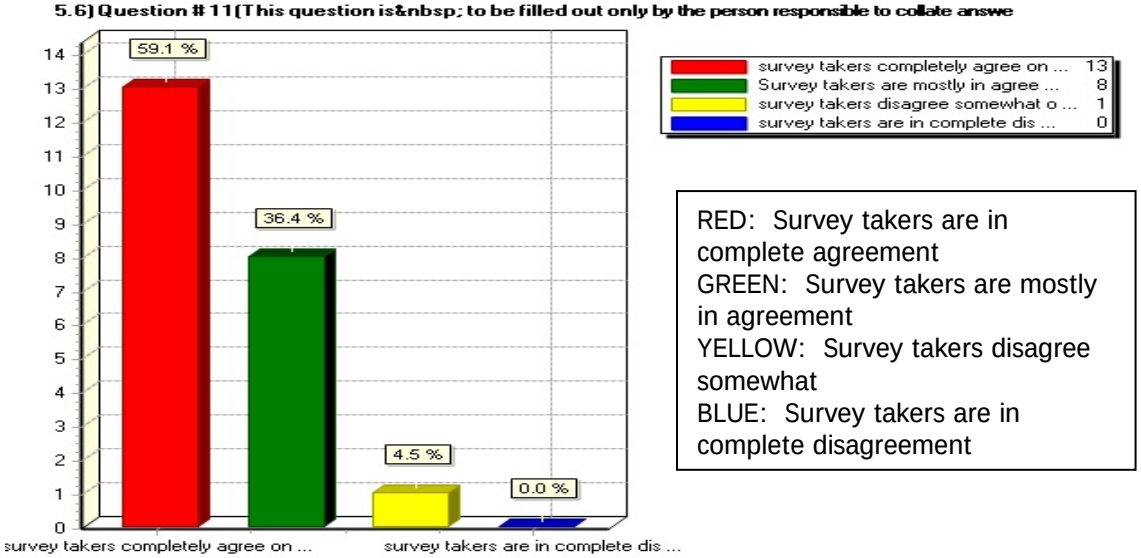

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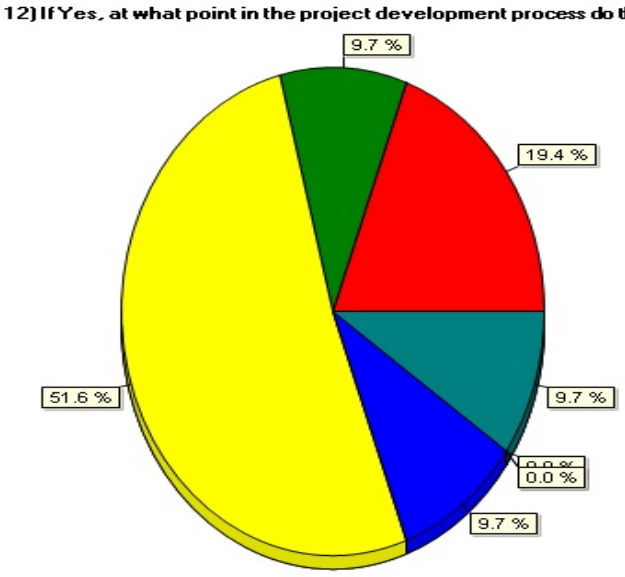
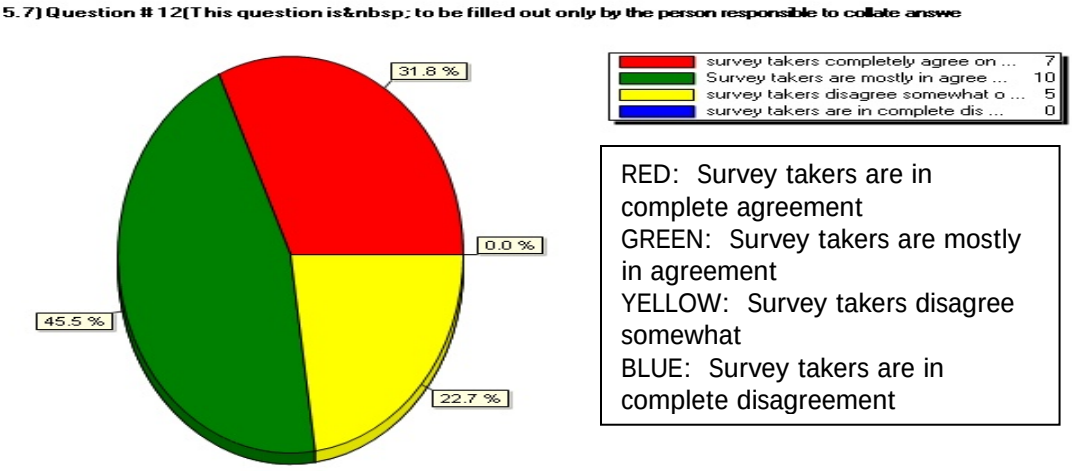
12) If Yes, at what point in the project development process do they have the first opportunity to get involved?
The official DOT response was:



RED: Planning Stage
GREEN: Topo Survey Stage
YELLOW: Early Design
BLUE: Mid-design
WHITE: Late Design
GRAY: Post Design/Pre-Construction
PURPLE: Construction
TEAL: Other

Other Responses:
As early as Project Manager calls for >
It depends on the project.
responses varied significantly
usually early design, sometimes planning
30% Design

However, within the DOT there was the following diversity of opinion to the official response.



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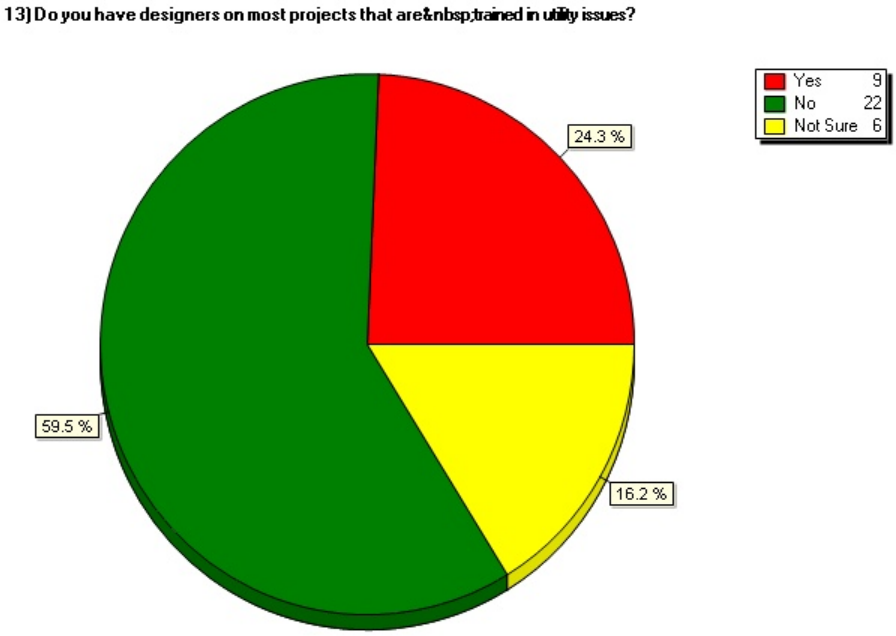
13) Do you have designers on most projects that are trained in utility issues?

The official DOT response was:



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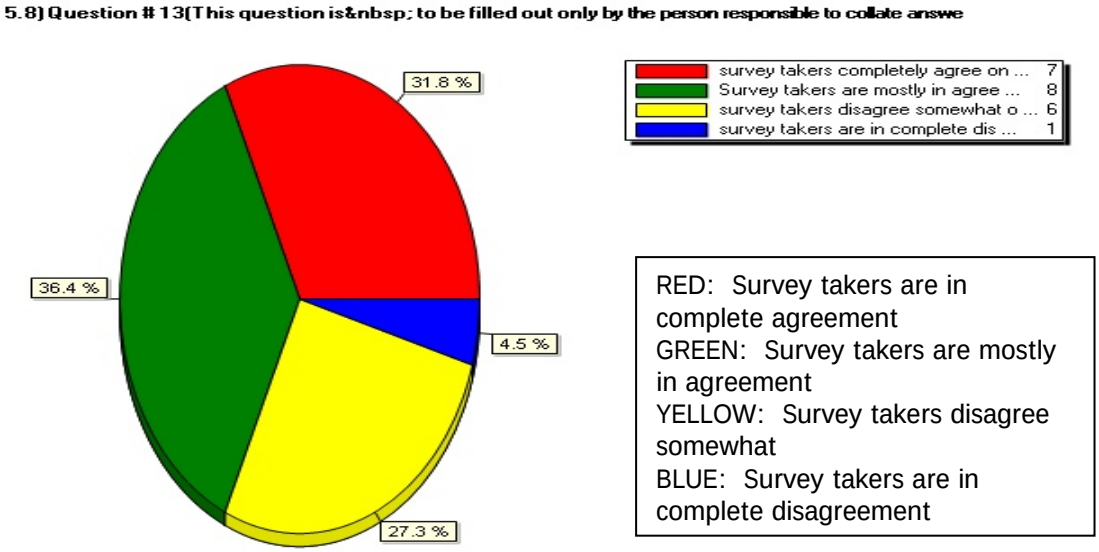

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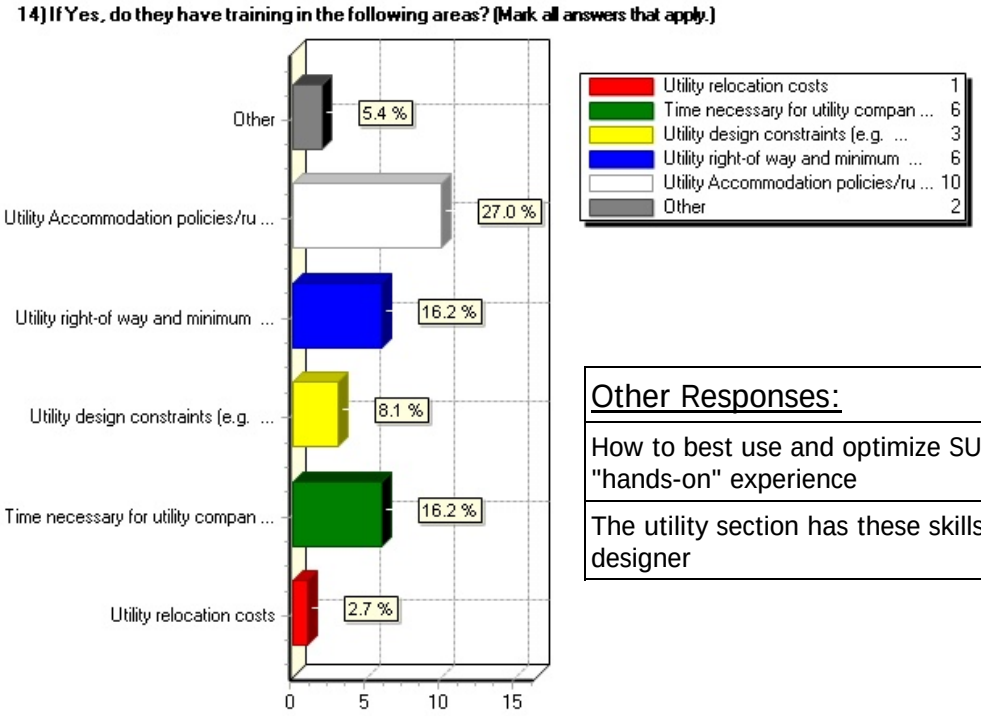
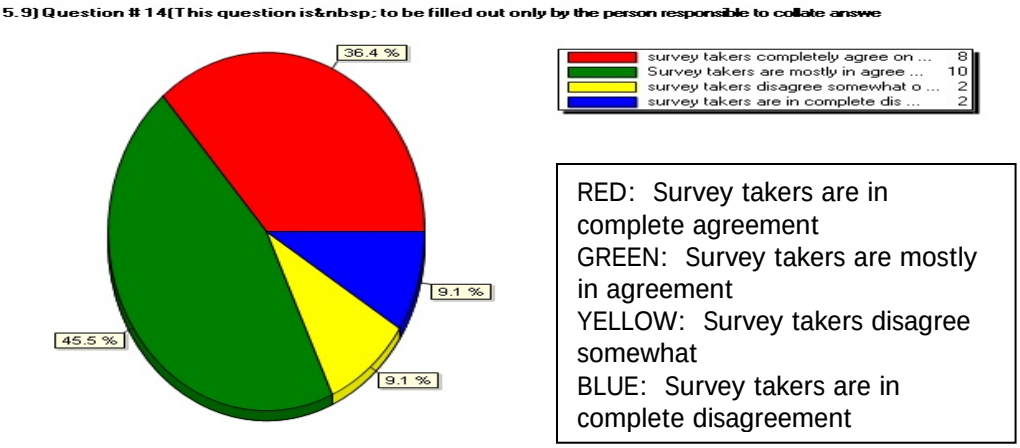
14) If Yes, do they have training in the following areas? (Mark all answers that apply.)
The official DOT response was:



Other Responses:
How to best use and optimize SUE; and through "hands-on" experience
The utility section has these skills - not the designer

However, within the DOT there was the following diversity of opinion to the official response.



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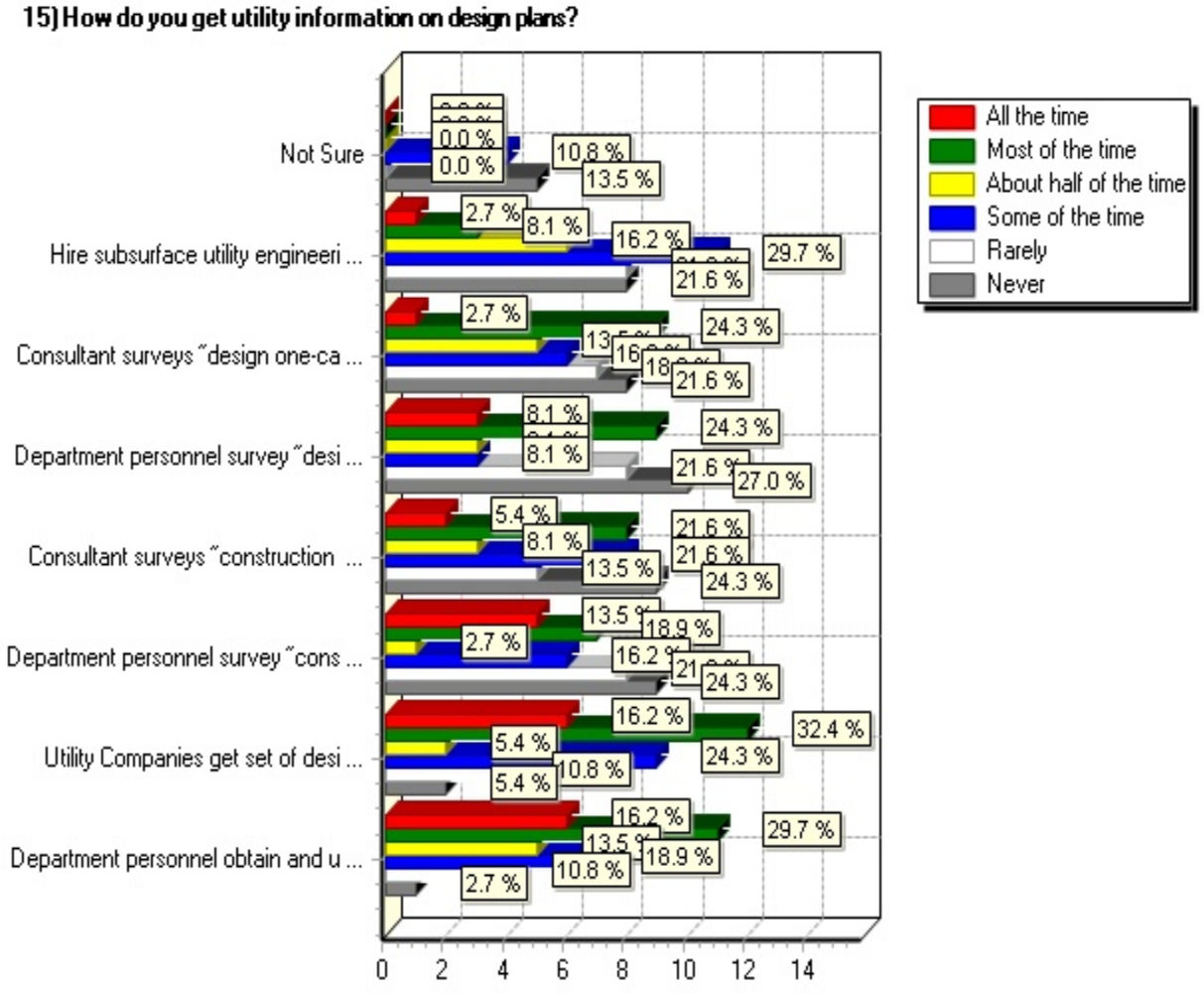
15) How do you get utility information on design plans?
The official DOT response was:

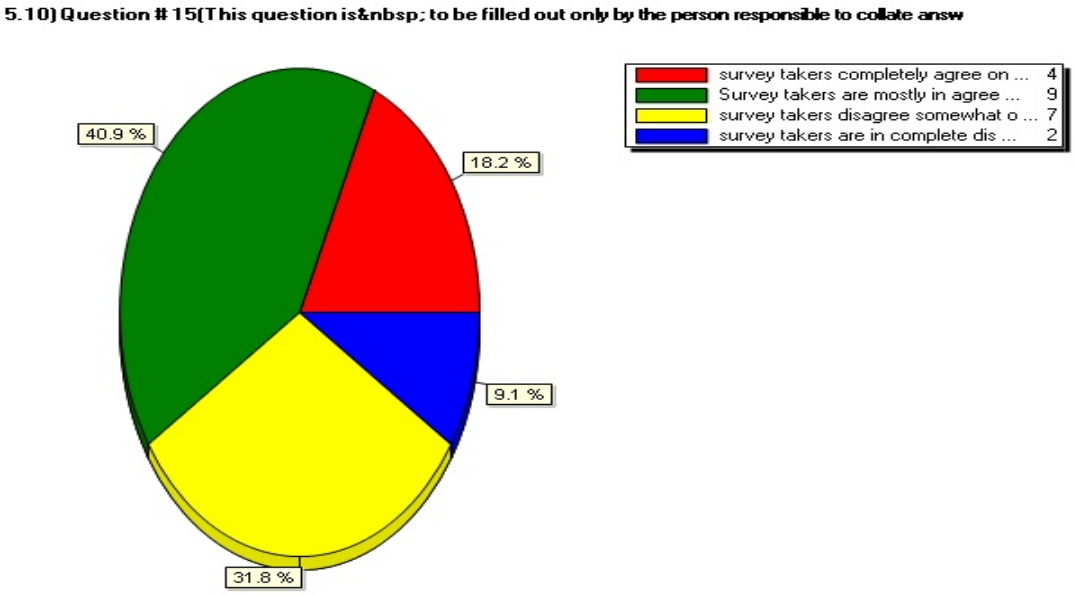


COMPLETE QUESTIONS
Department personnel obtain and use utility records
Utility Companies get set of design plans and draw utilities on it
Department personnel survey “construction one-call marks”
Consultant surveys “construction one-call marks”
Department personnel survey “design one-call marks”
Consultant surveys “design one-call marks”
Hire subsurface utility engineering firm
Not Sure

Comment Responses:

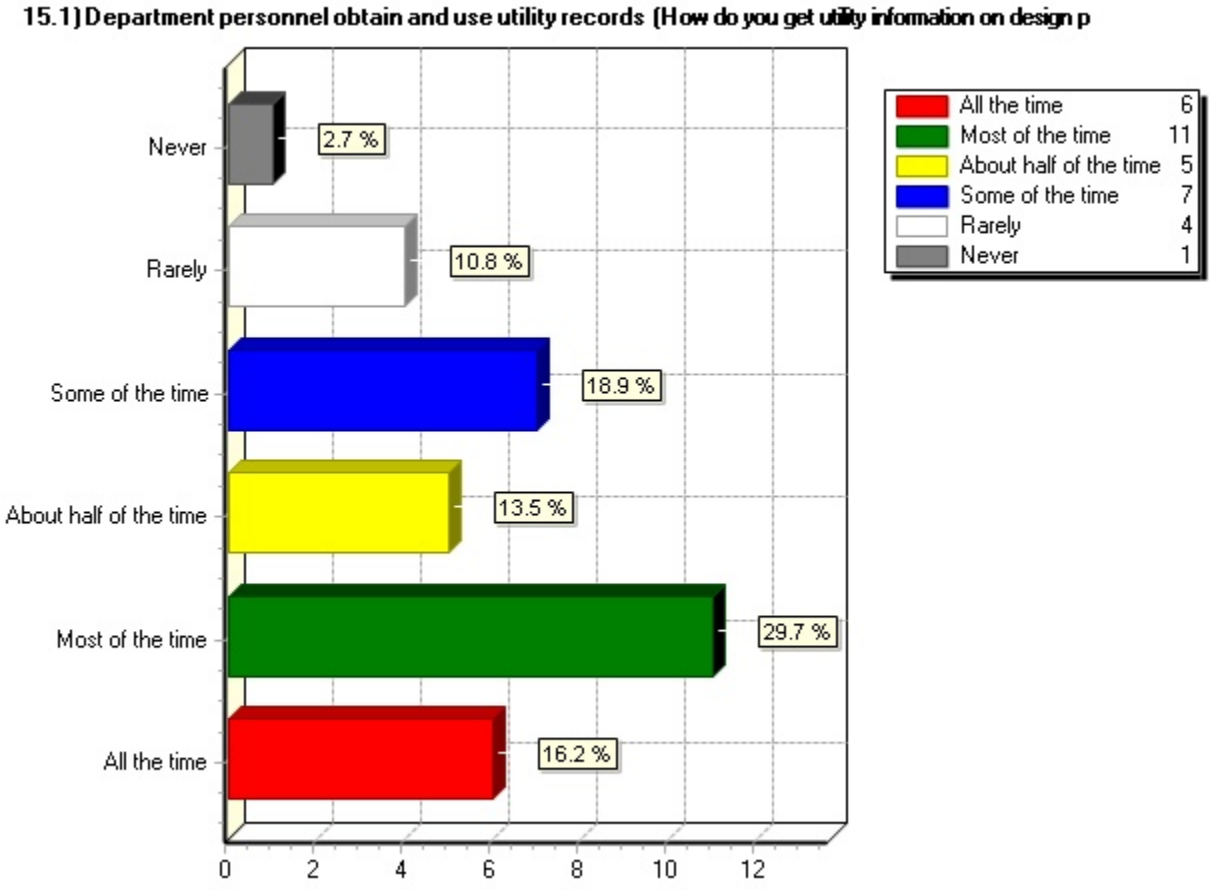
Sometimes poor compliance for marking
UG utils loc by One-call & UT - DOT Surv
wide spread across the feedback
locates are obtained during design phase
unable to comment on consultant actions

However, within the DOT there was the following diversity of opinion to the official response.

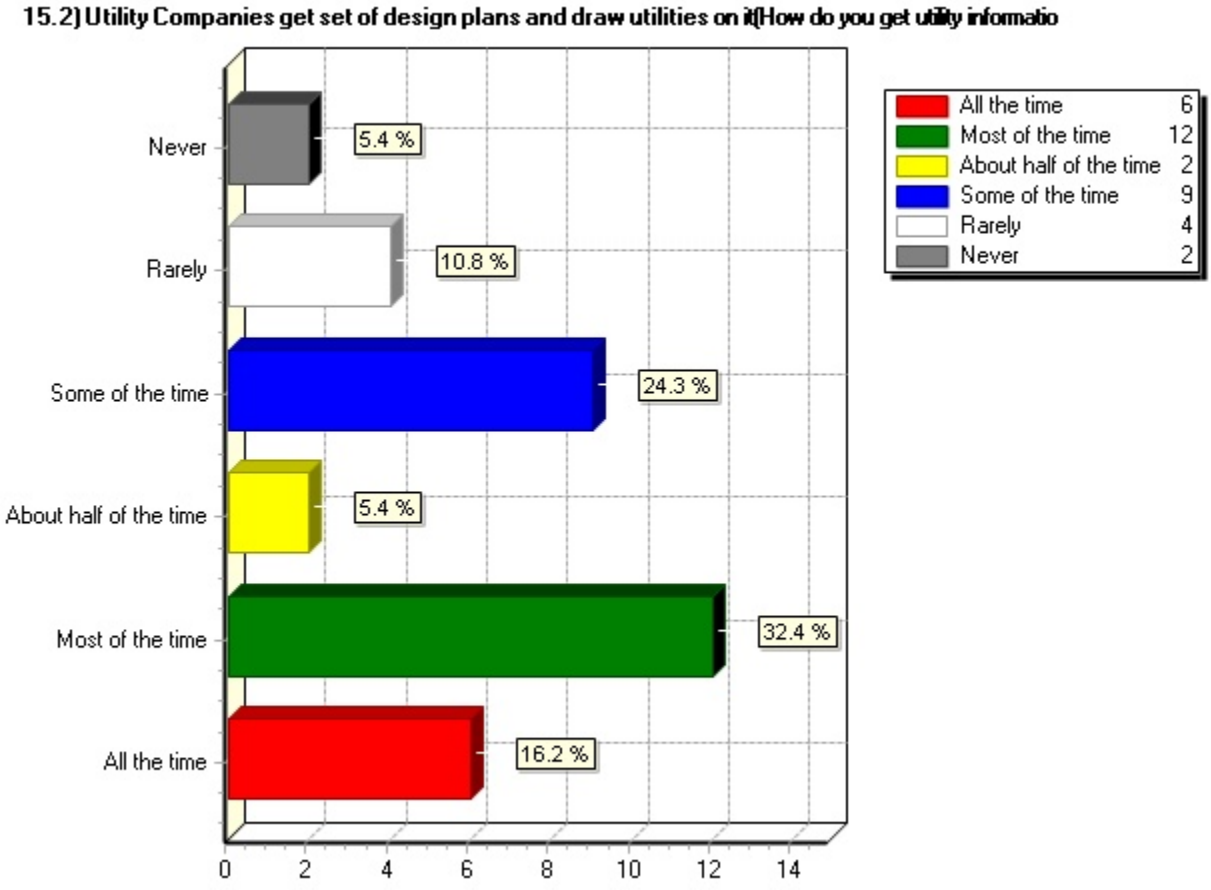


Here is the detailed response for each question asked in # 15.

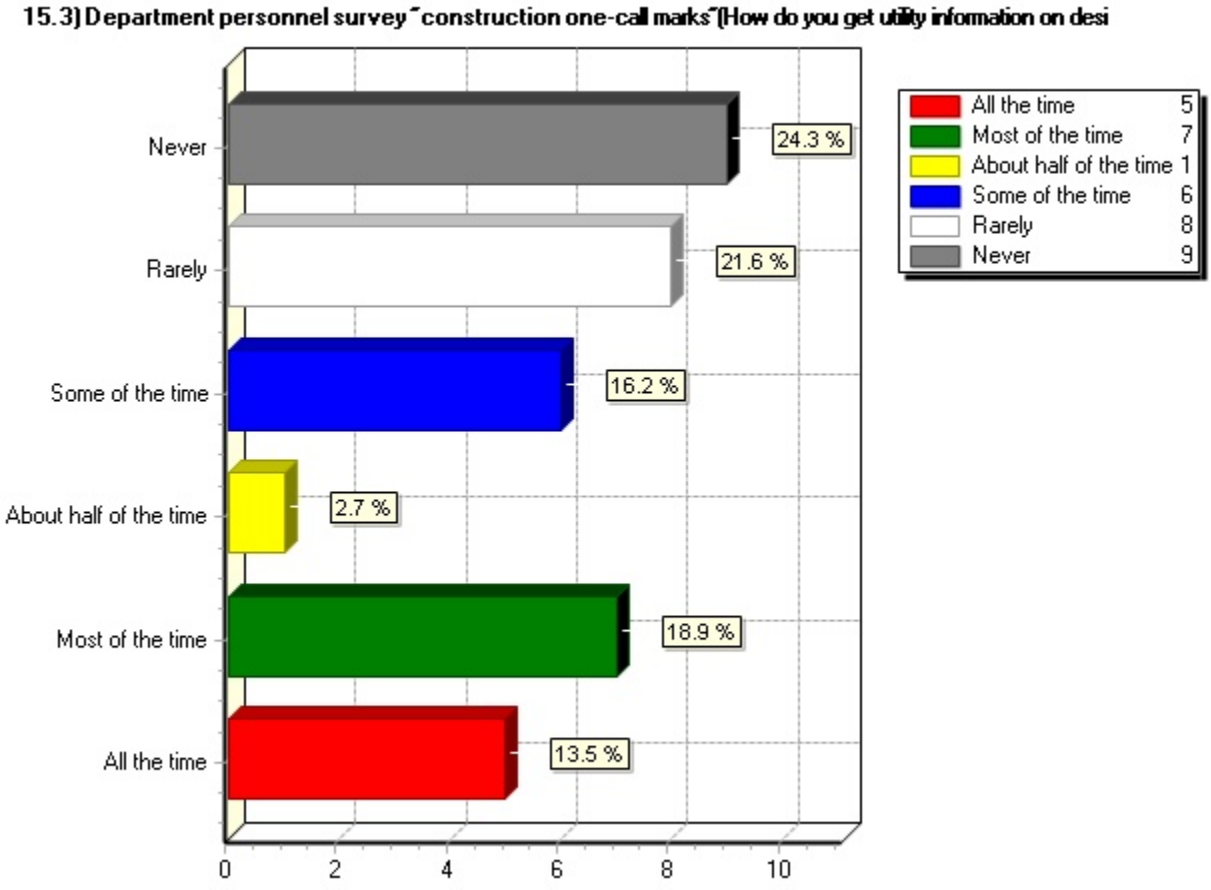
15.1) Department personnel obtain and use utility records (How do you get utility information on design plans?)



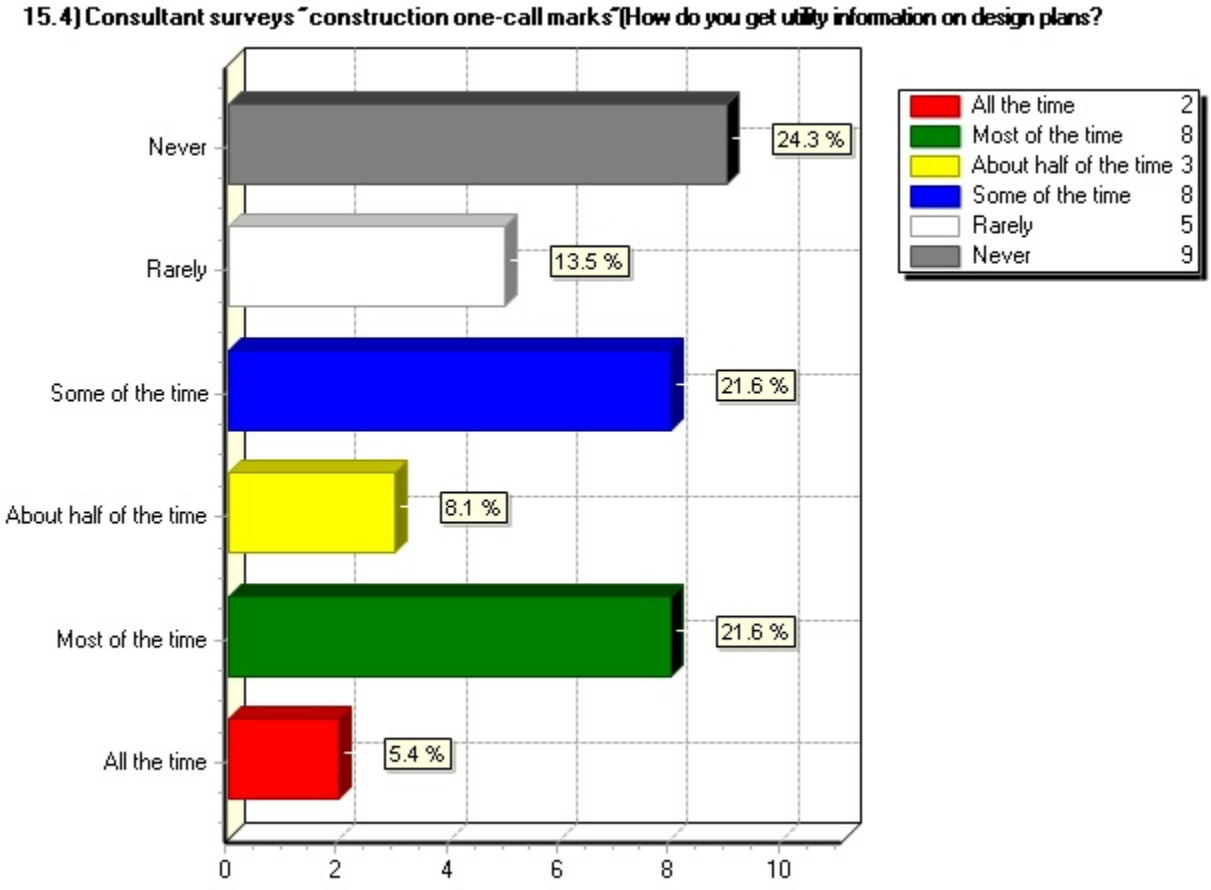
15.2) Utility Companies get set of design plans and draw utilities on it(How do you get utility information on design plans?)



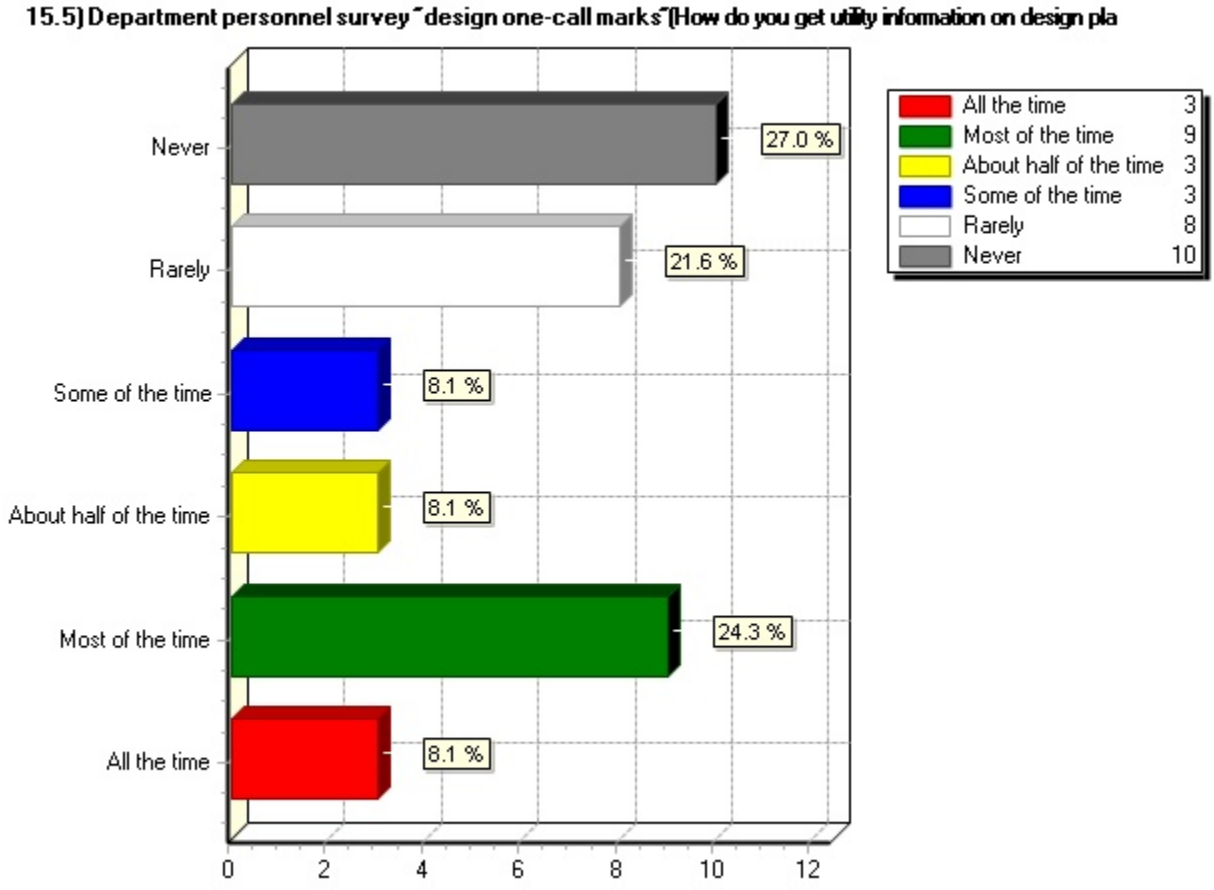
15.3) Department personnel survey “construction one-call marks”(How do you get utility information on design plans?)



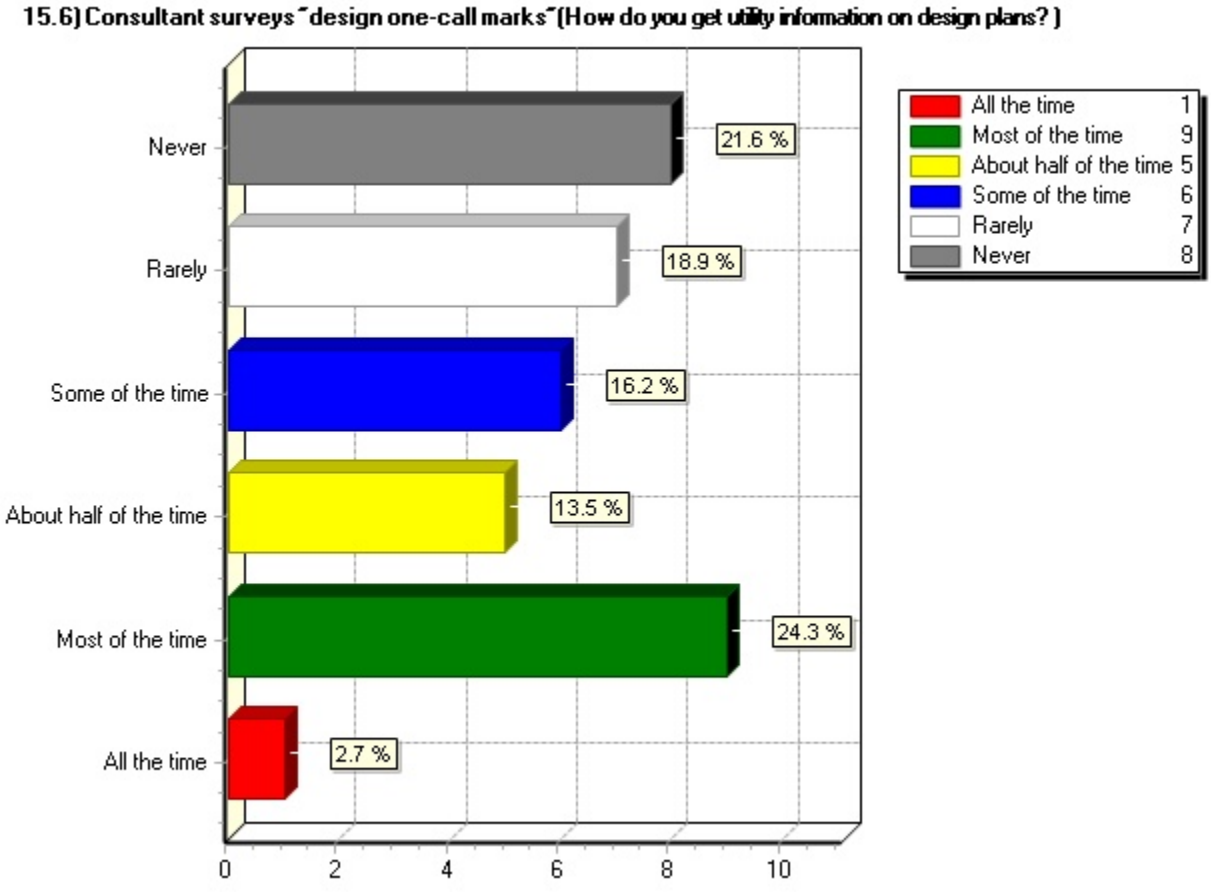
15.4) Consultant surveys “construction one-call marks”(How do you get utility information on design plans?)



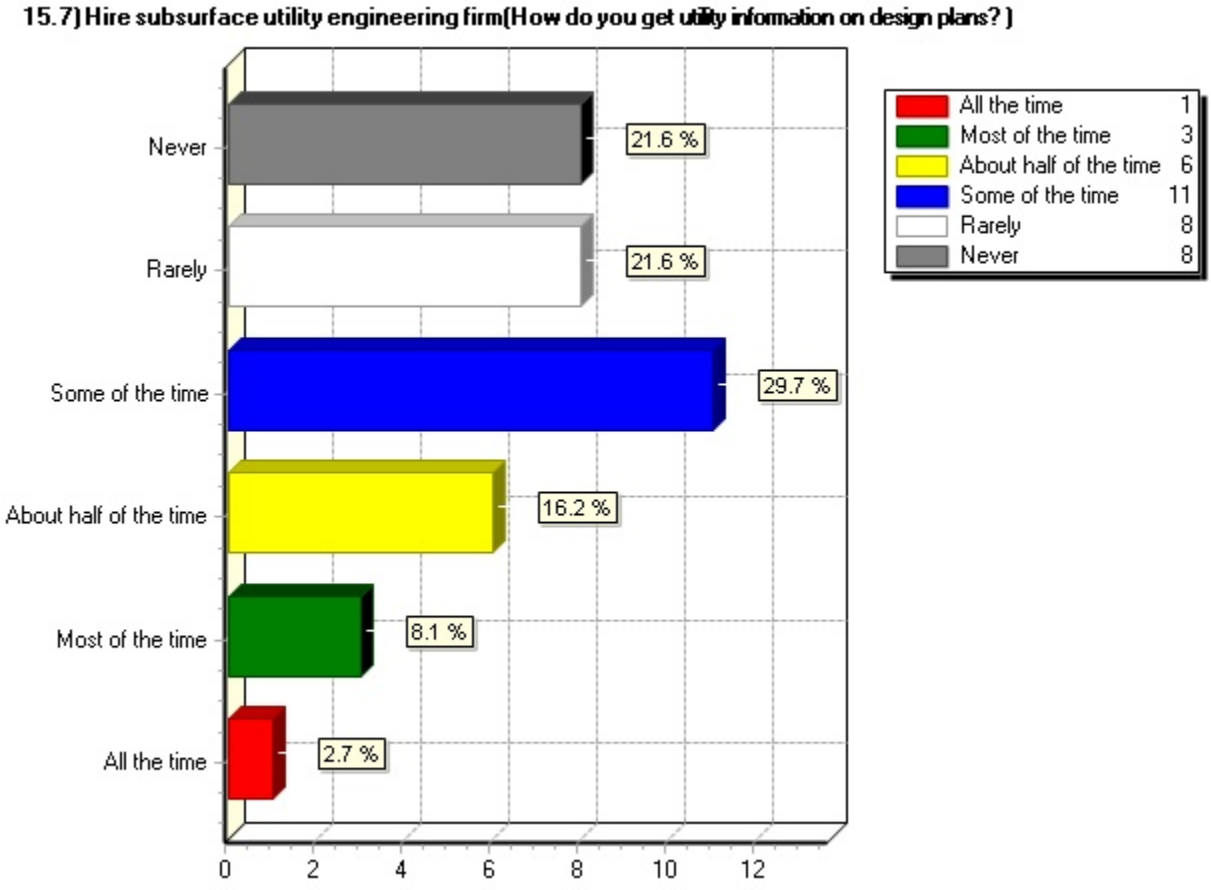
15.5) Department personnel survey “design one-call marks”(How do you get utility information on design plans?)



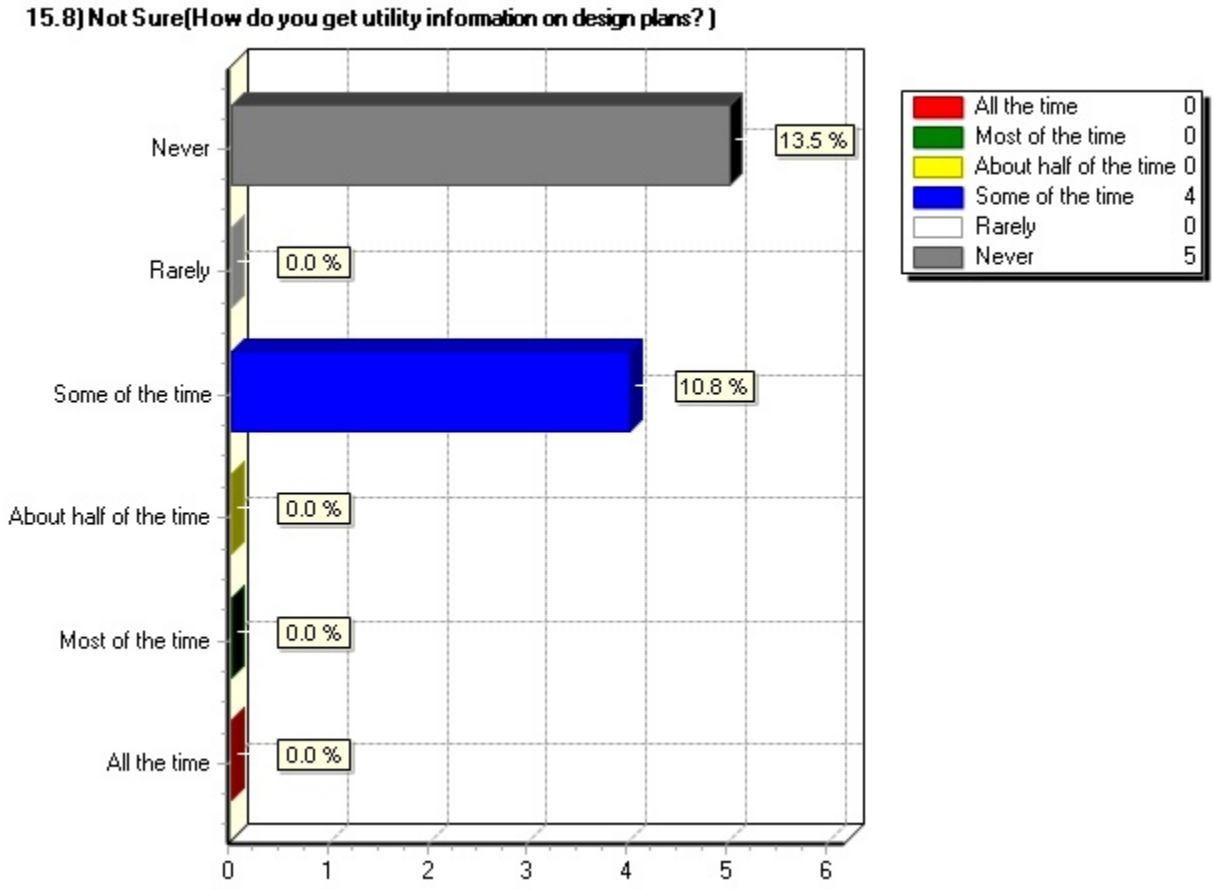
15.6) Consultant surveys “design one-call marks”(How do you get utility information on design plans?)



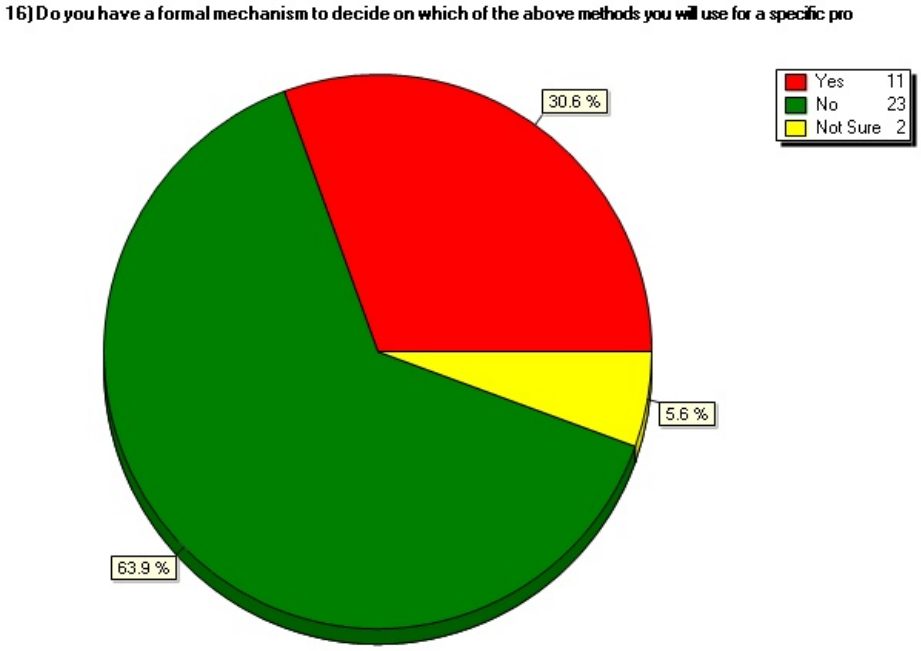
15.7) Hire subsurface utility engineering firm(How do you get utility information on design plans?)



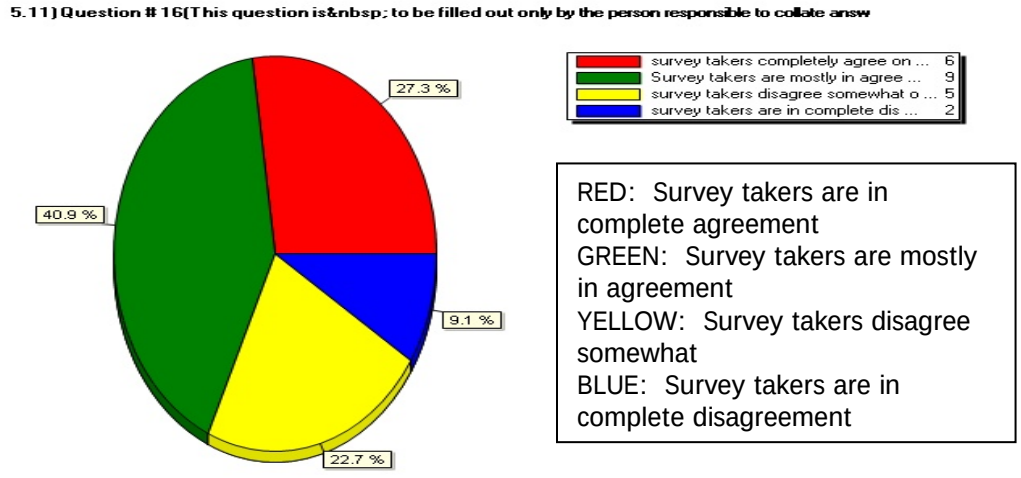
15.8) Not Sure(How do you get utility information on design plans?)



16) Do you have a formal mechanism to decide on which of the above methods you will use for a specific project? The official DOT response was:



However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
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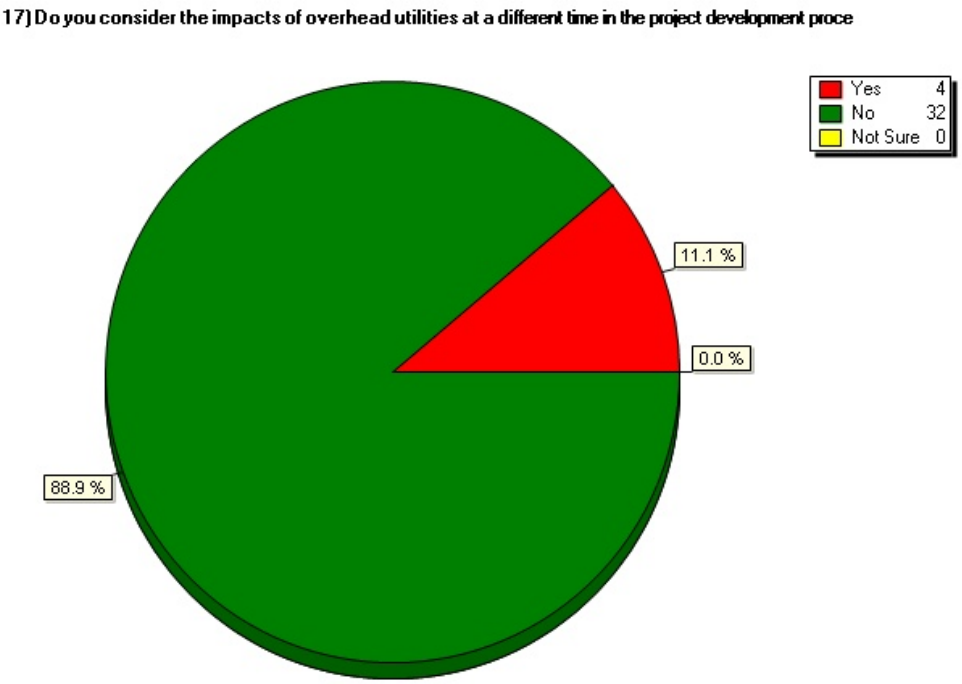
BLUE: Survey takers are in complete disagreement

17) Do you consider the impacts of overhead utilities at a different time in the project development process than you do the underground utilities? The official DOT response was:



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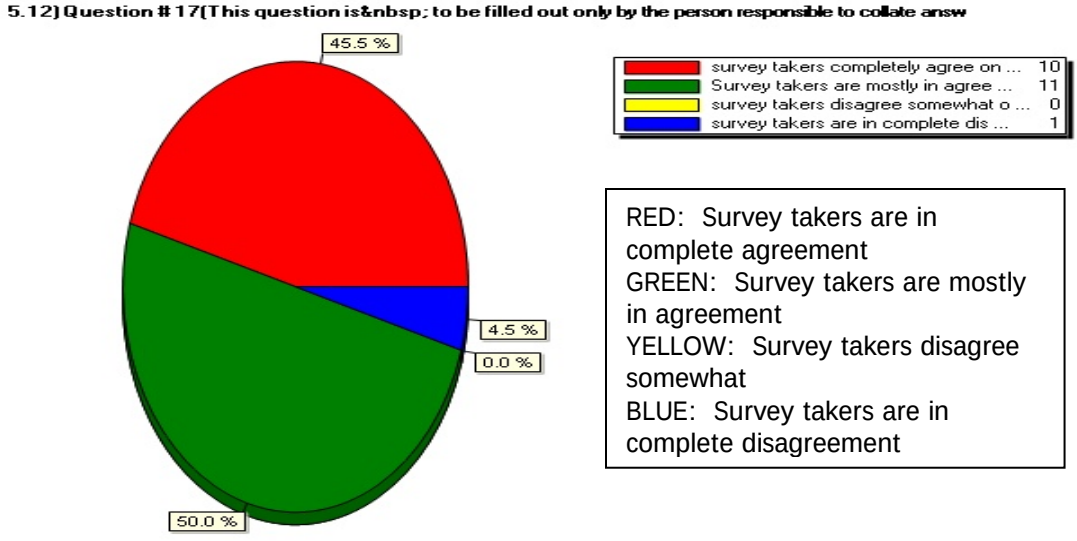

RED: Survey takers are in complete agreement
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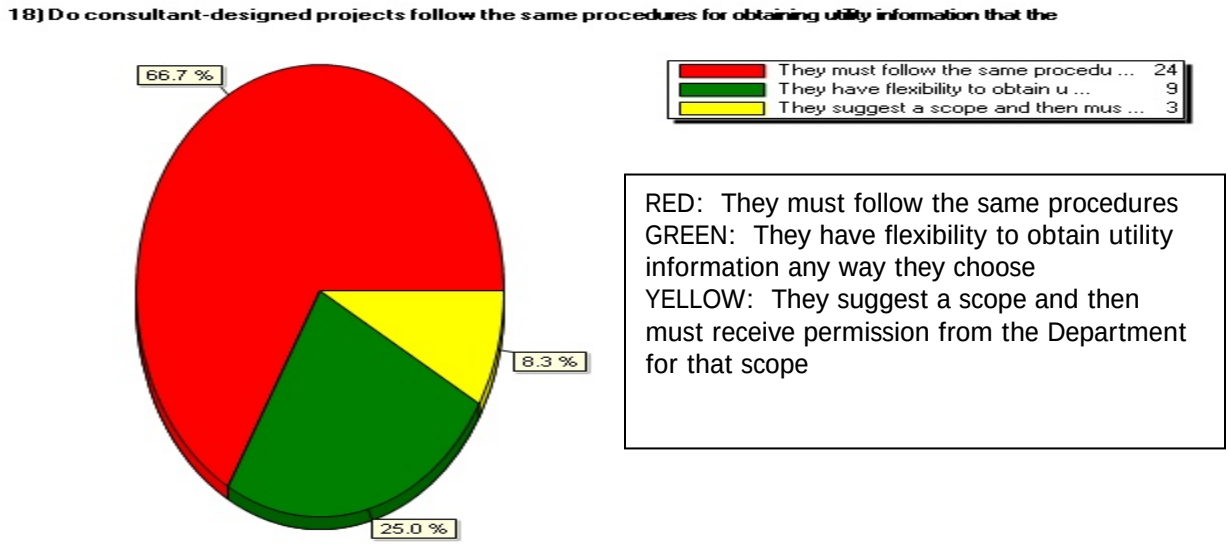
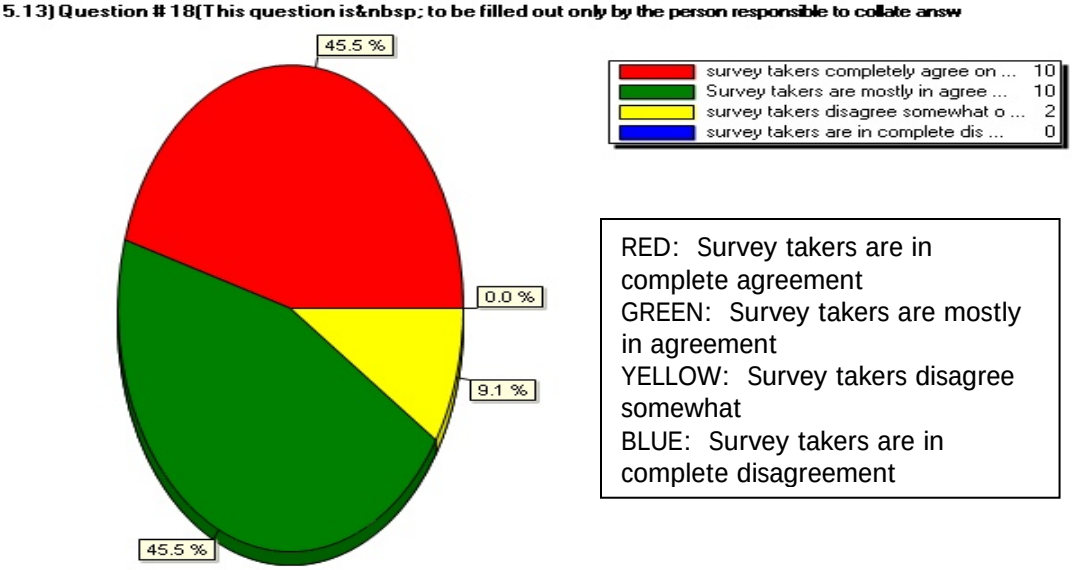
18) Do consultant-designed projects follow the same procedures for obtaining utility information that the department does? The official DOT response was:



RED: They must follow the same procedures
GREEN: They have flexibility to obtain utility information any way they choose
YELLOW: They suggest a scope and then must receive permission from the Department for that scope

However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
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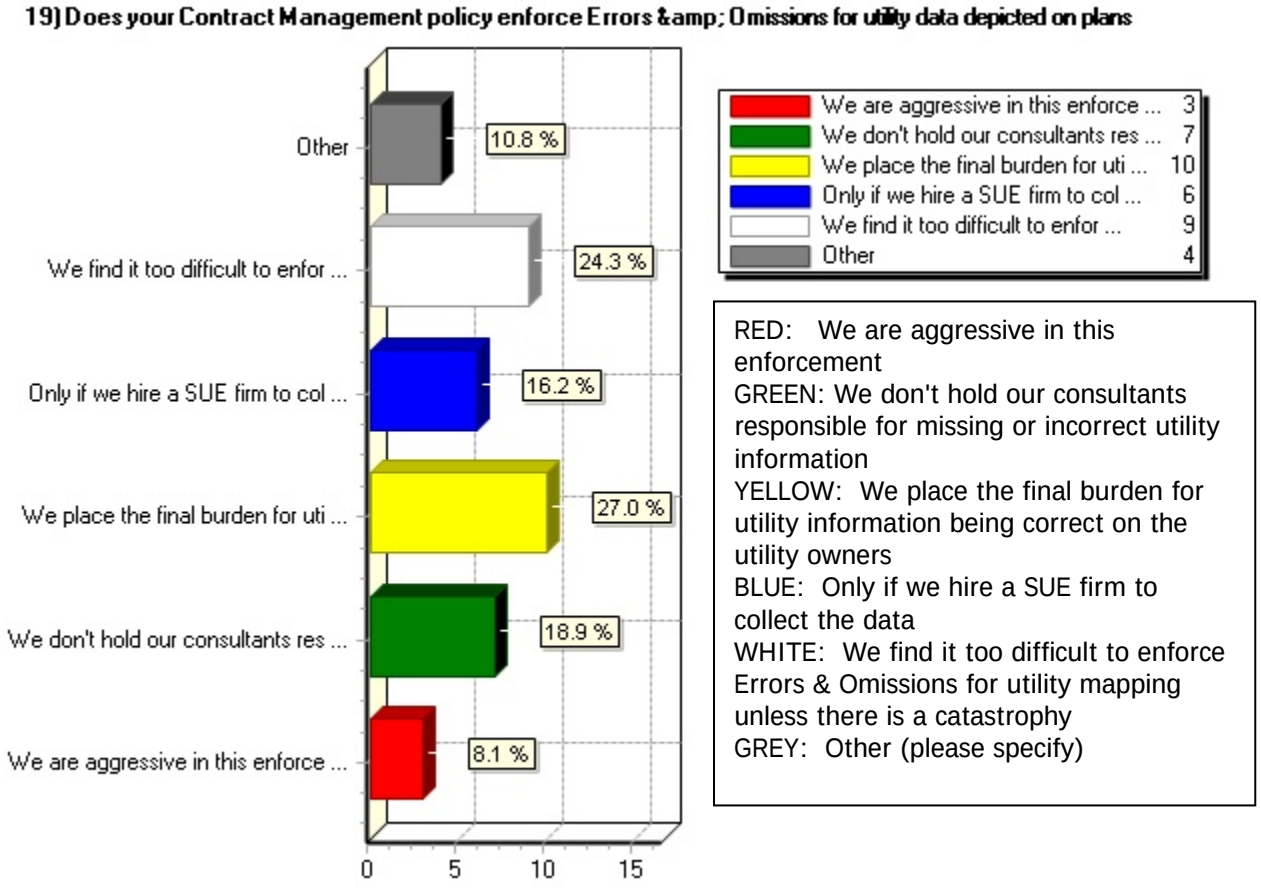
19) Does your Contract Management policy enforce Errors & Omissions for utility data depicted on plans by consultants? The official DOT response was:

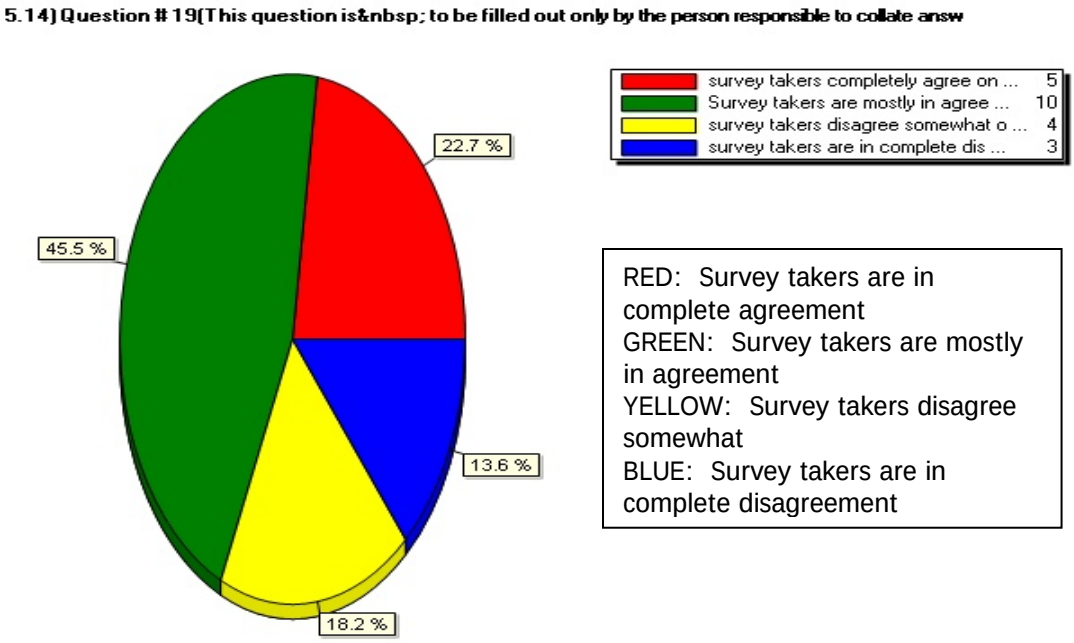


RED: We are aggressive in this enforcement
GREEN: We don't hold our consultants responsible for missing or incorrect utility information
YELLOW: We place the final burden for utility information being correct on the utility owners
BLUE: Only if we hire a SUE firm to collect the data
WHITE: We find it too difficult to enforce Errors & Omissions for utility mapping unless there is a catastrophy
GREY: Other (please specify)

Other Responses:

It depends on the project issues.
we evaluate consultants on this
It depends on the situation at hand. If the consultant or the utility owner provided erroneous information we could go after them.
the department usually carries the burden for errors and ommisions, as a change of condition, if they are iencountered during the project. A SUE consultant would be responsible for what they located not what they couldn't locate.

However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
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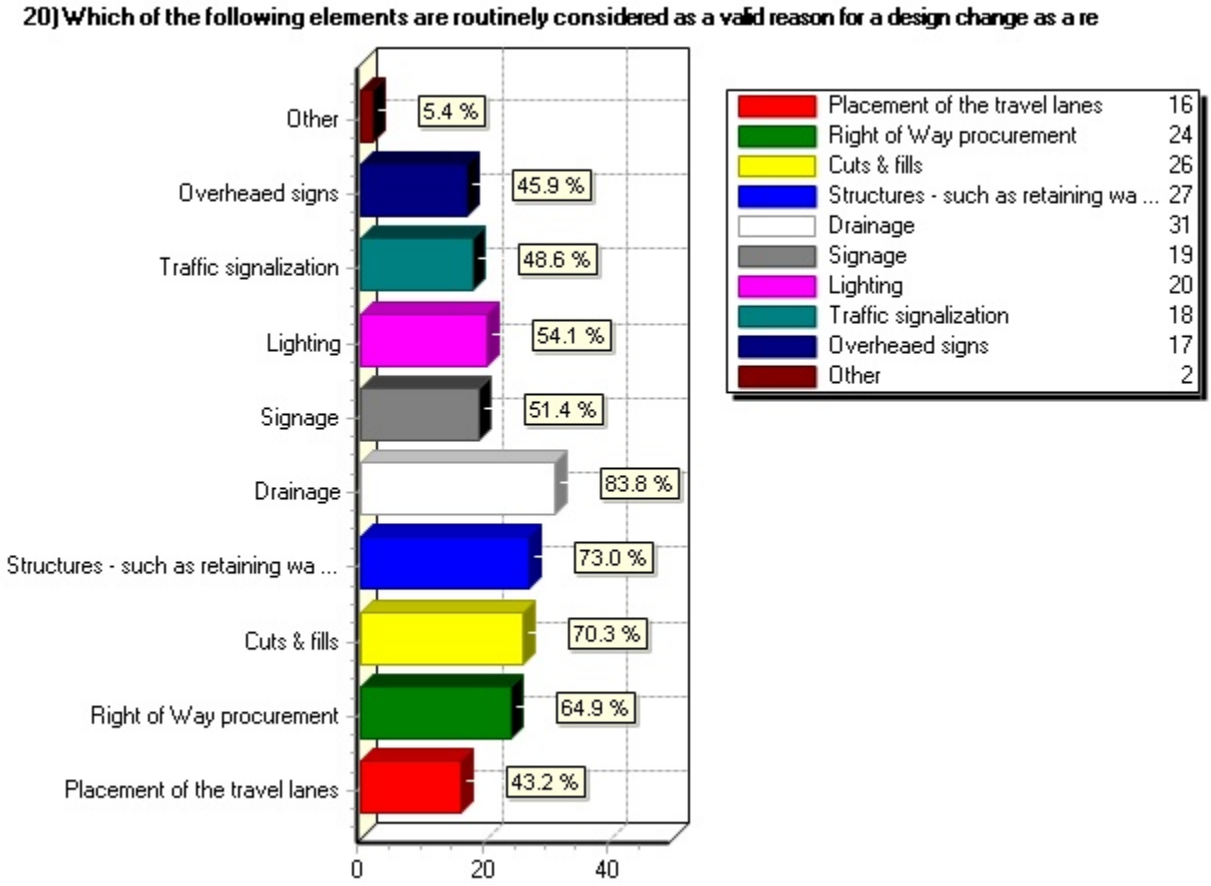
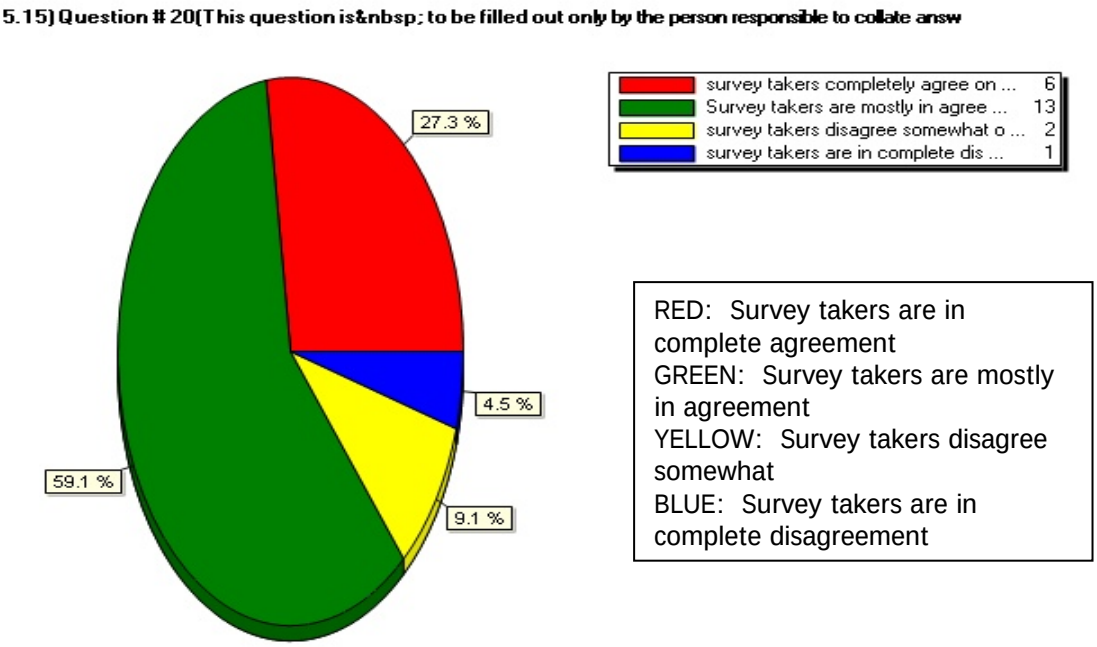
20) Which of the following elements are routinely considered as a valid reason for a design change as a result of a utility conflict? (Mark all answers that apply.) The official DOT response was:



Other Responses:

Depending upon the nature of the conflict, any of them.
It depends on the cost to benefit analysis
these are "most often" maybe not "routine"
cost and time of utility relocation
These are predicated on changes during design, not during construction

However, within the DOT there was the following diversity of opinion to the official response.



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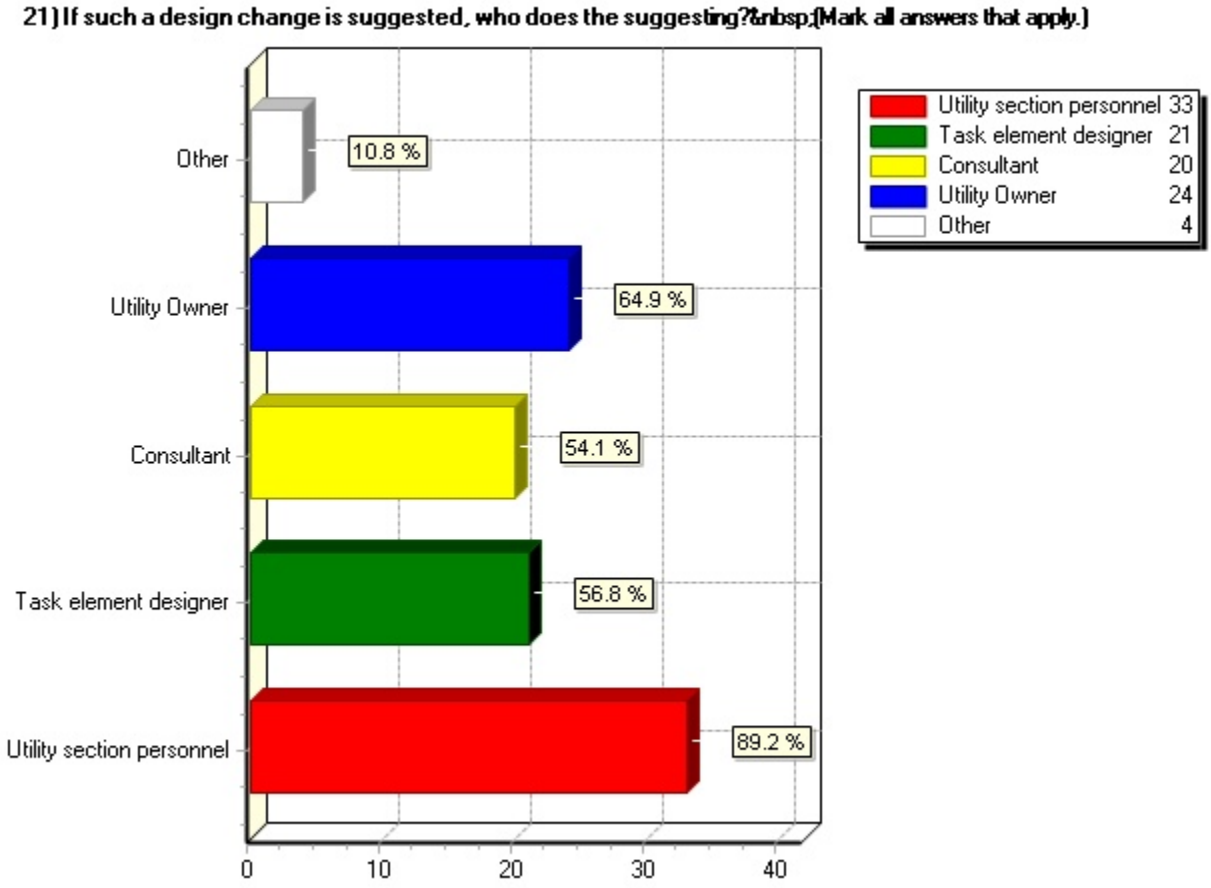
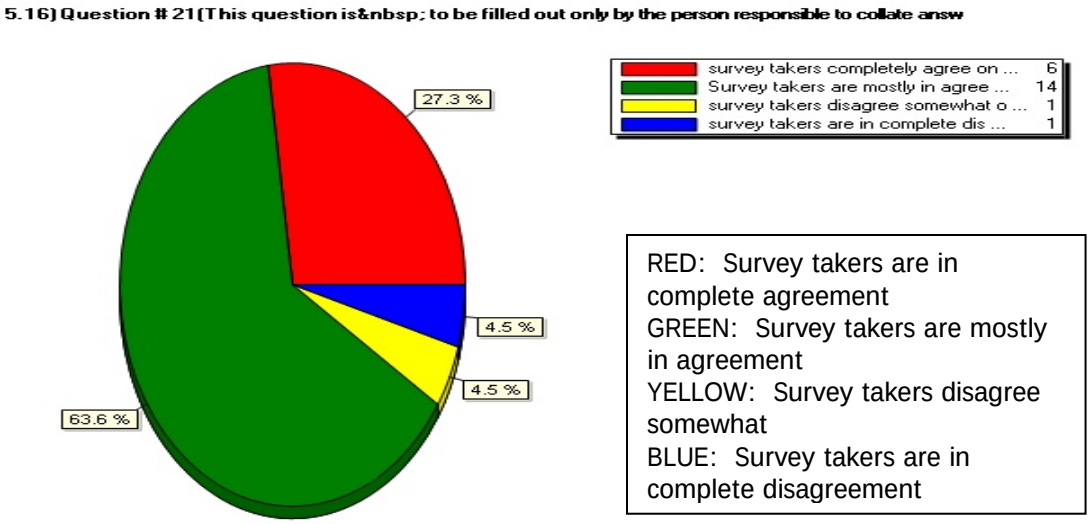
21) If such a design change is suggested, who does the suggesting? (Mark all answers that apply.) The official DOT response was:



Other Responses:

usually the utility owner identifies and requests modification, but Util. Coord or Designer may identify the conflict as well.
Any member of the design team
Anyone involved that can present an improved project.
field engineer
Construction personnel

However, within the DOT there was the following diversity of opinion to the official response.



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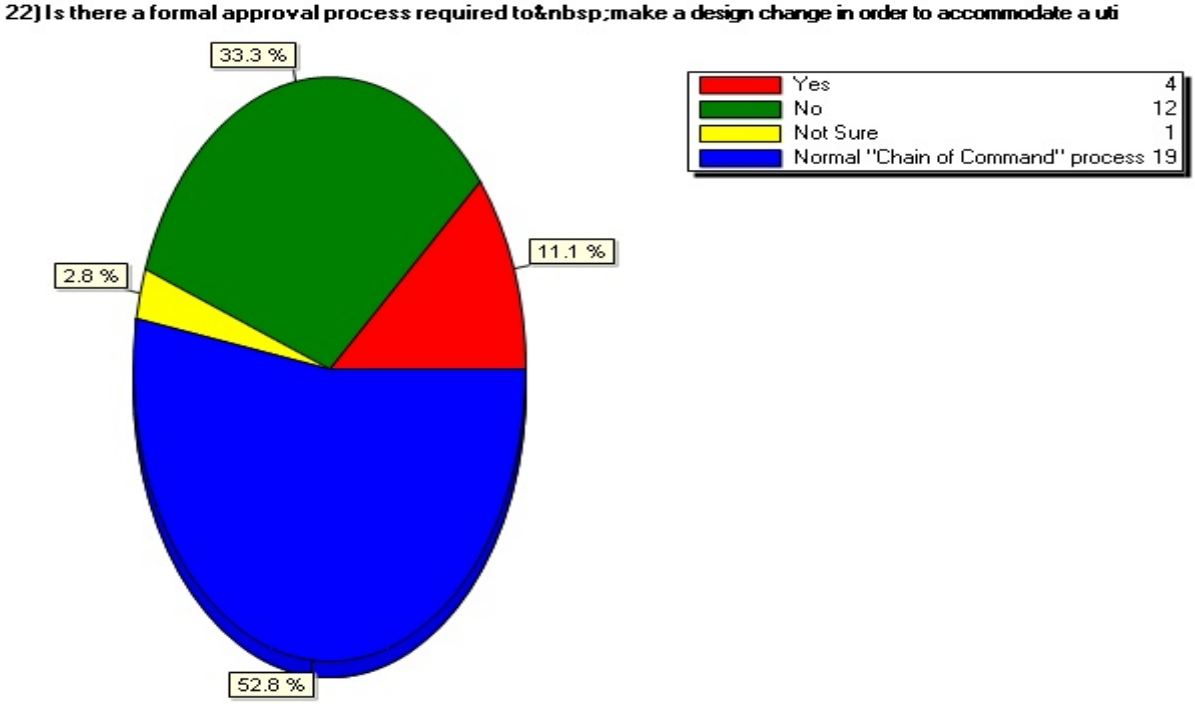
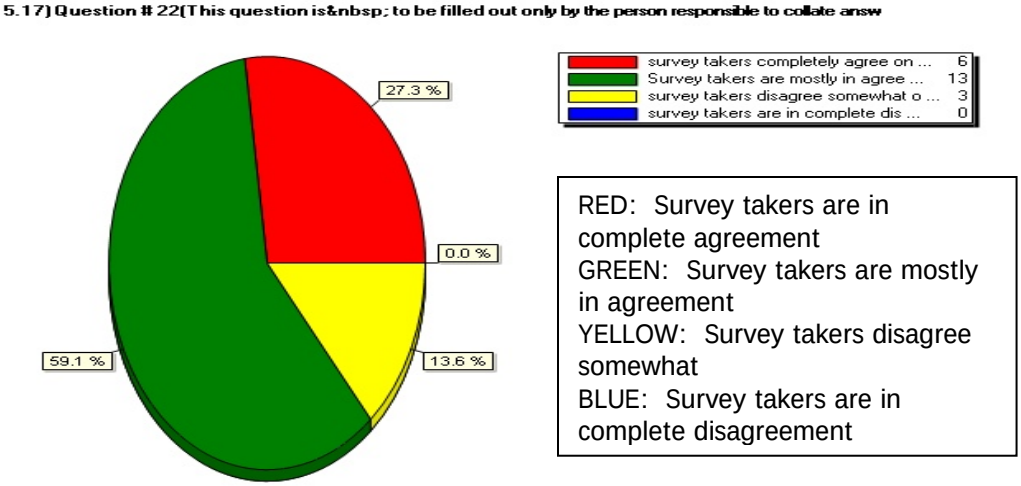
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

22) Is there a formal approval process required to make a design change in order to accommodate a utility? The official DOT response was:

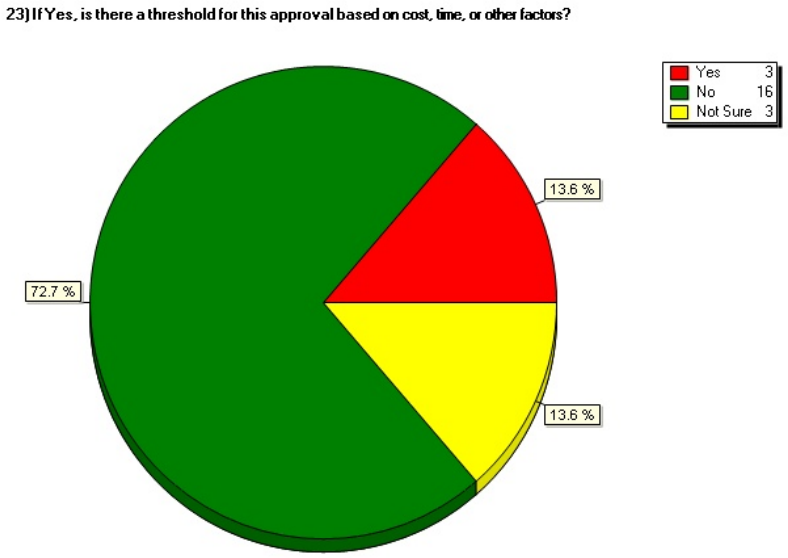


However, within the DOT there was the following diversity of opinion to the official response.

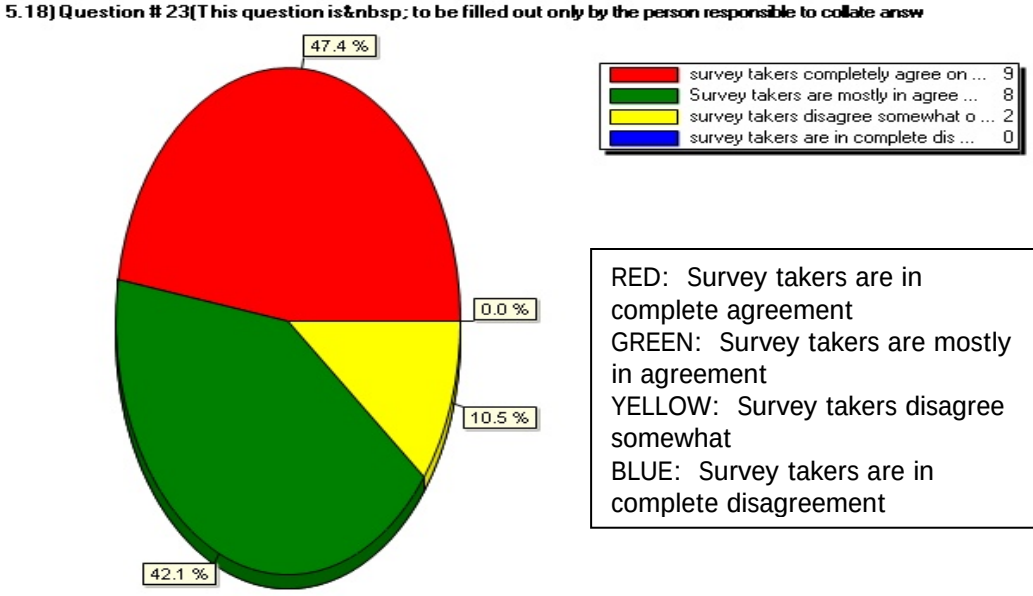


RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

23) If Yes, is there a threshold for this approval based on cost, time, or other factors? The official DOT response was:

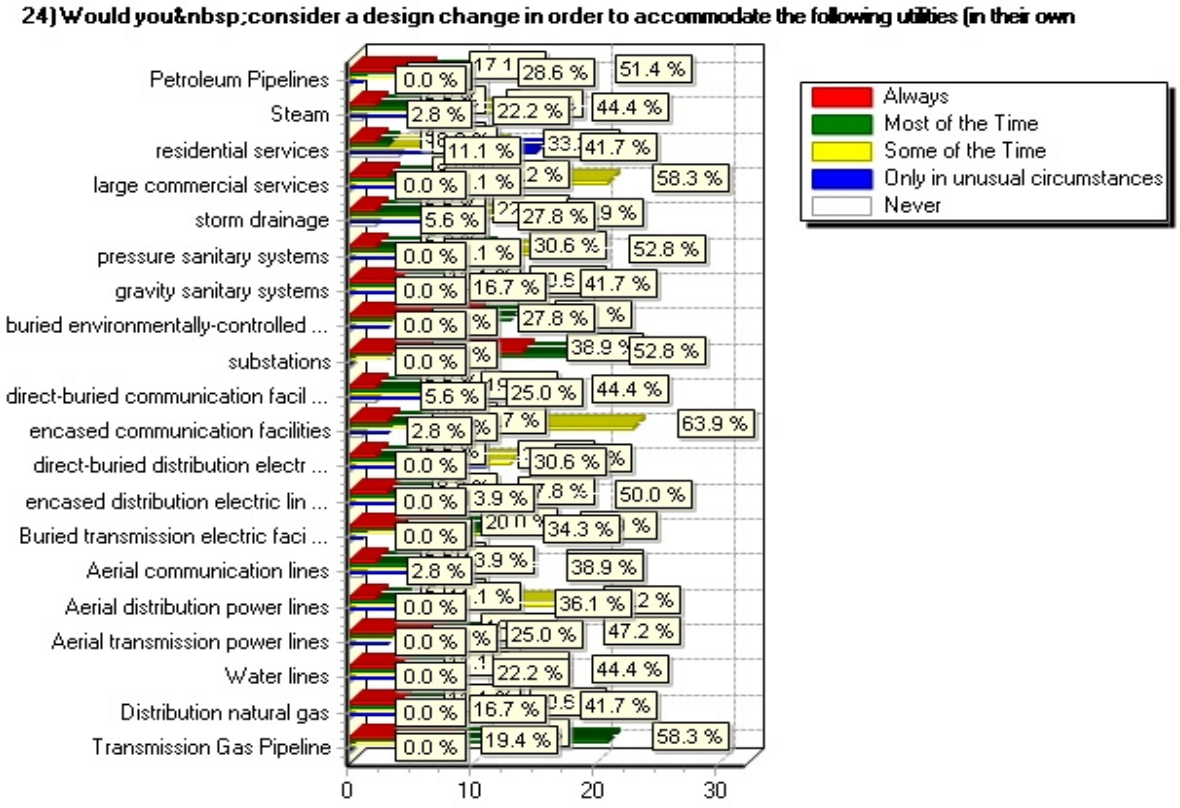


However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

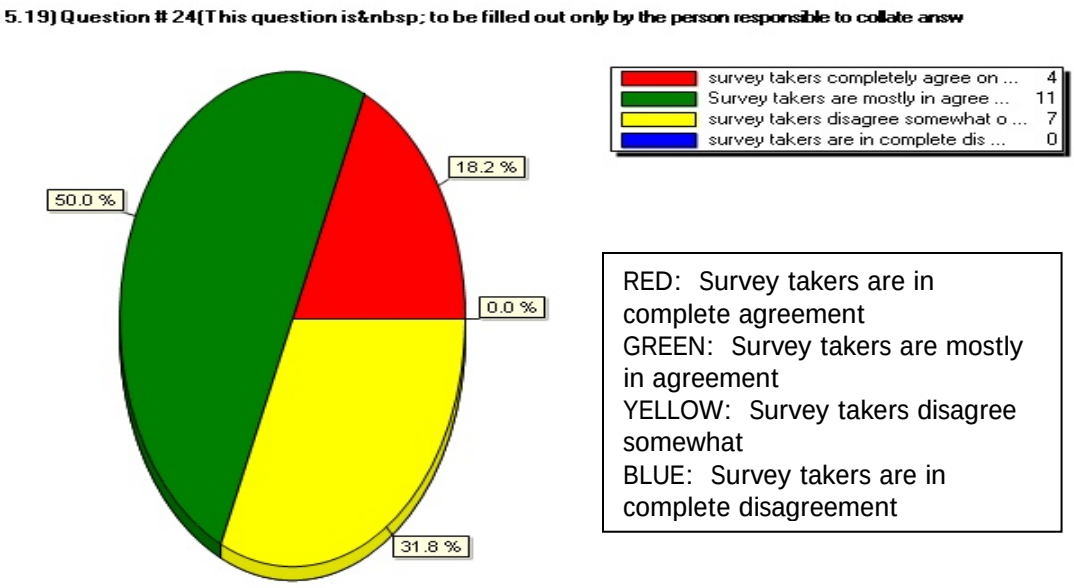
24) Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design? The official DOT response was:



Comment Responses:

Cell towers - Always
Few steam conflicts with MoDOT projects
Everything should be considered.
All are case by case.
We "always consider, above is frequency
We often try to design around utilities
each case is considered on its own merit
all evaluated on a case-by-case basis
based on a cost analysis of the options
We would design around were possible

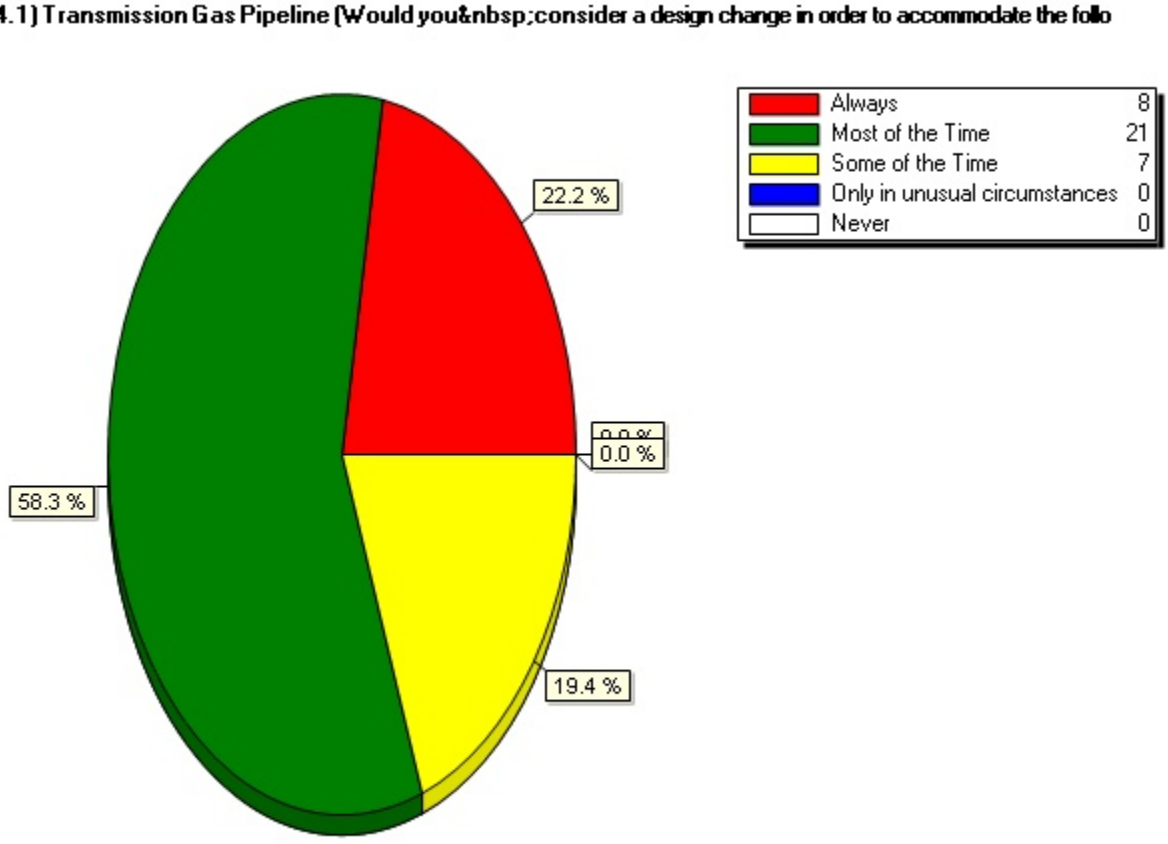
However, within the DOT there was the following diversity of opinion to the official response.



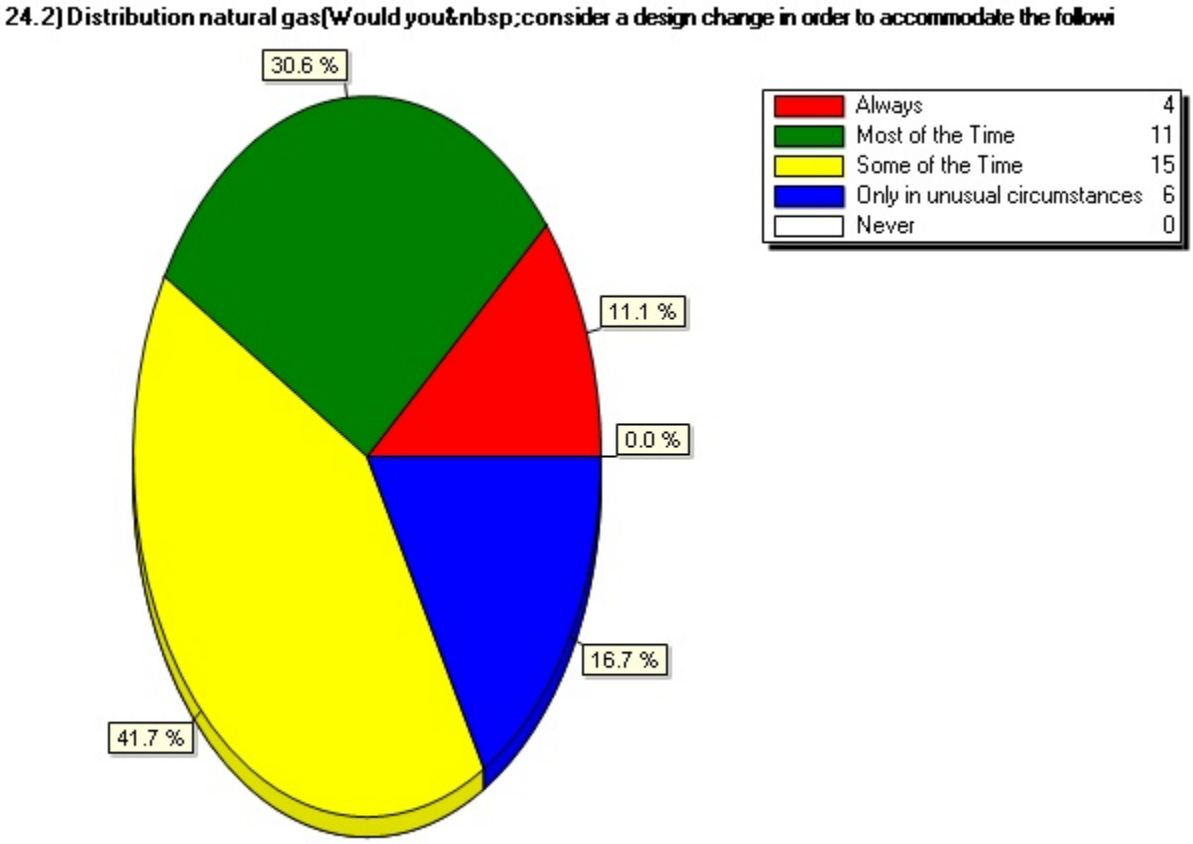
RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

Here is the detailed response for each question asked in # 24.

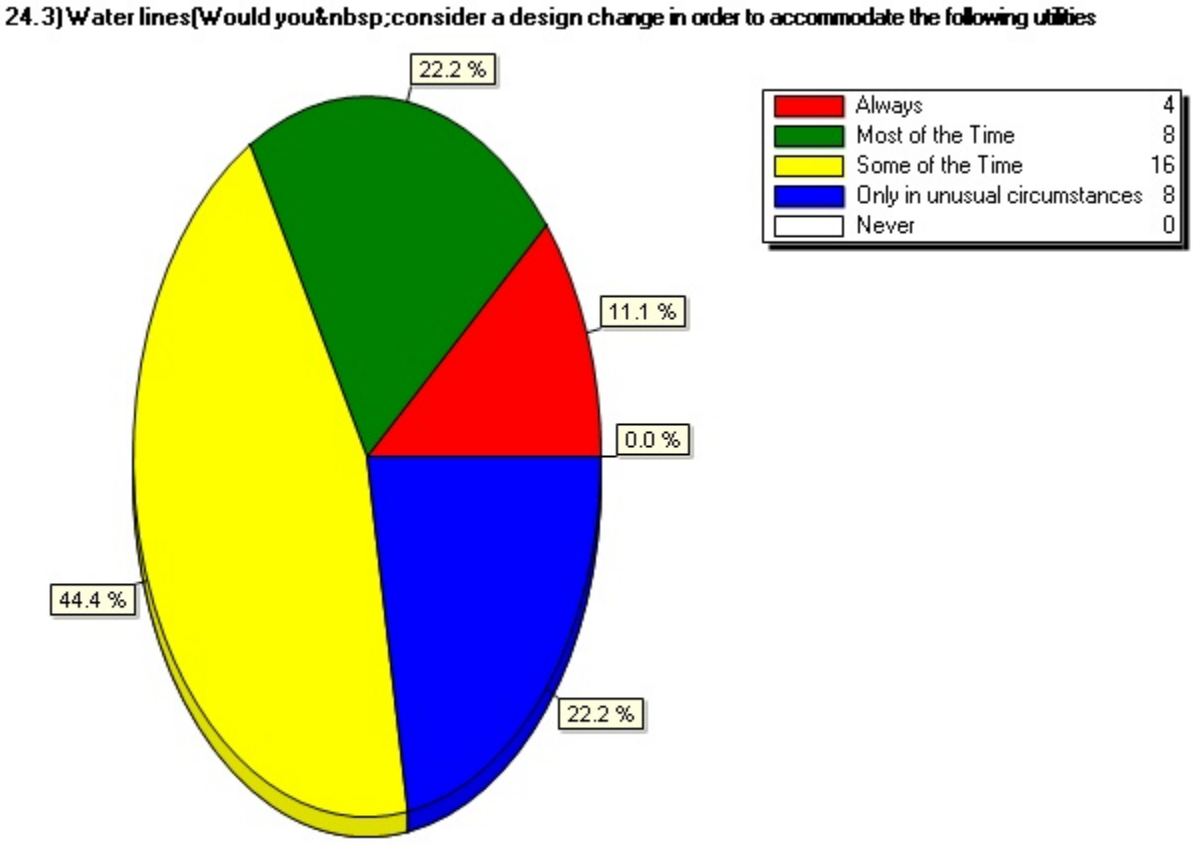
24.1) Transmission Gas Pipeline (Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



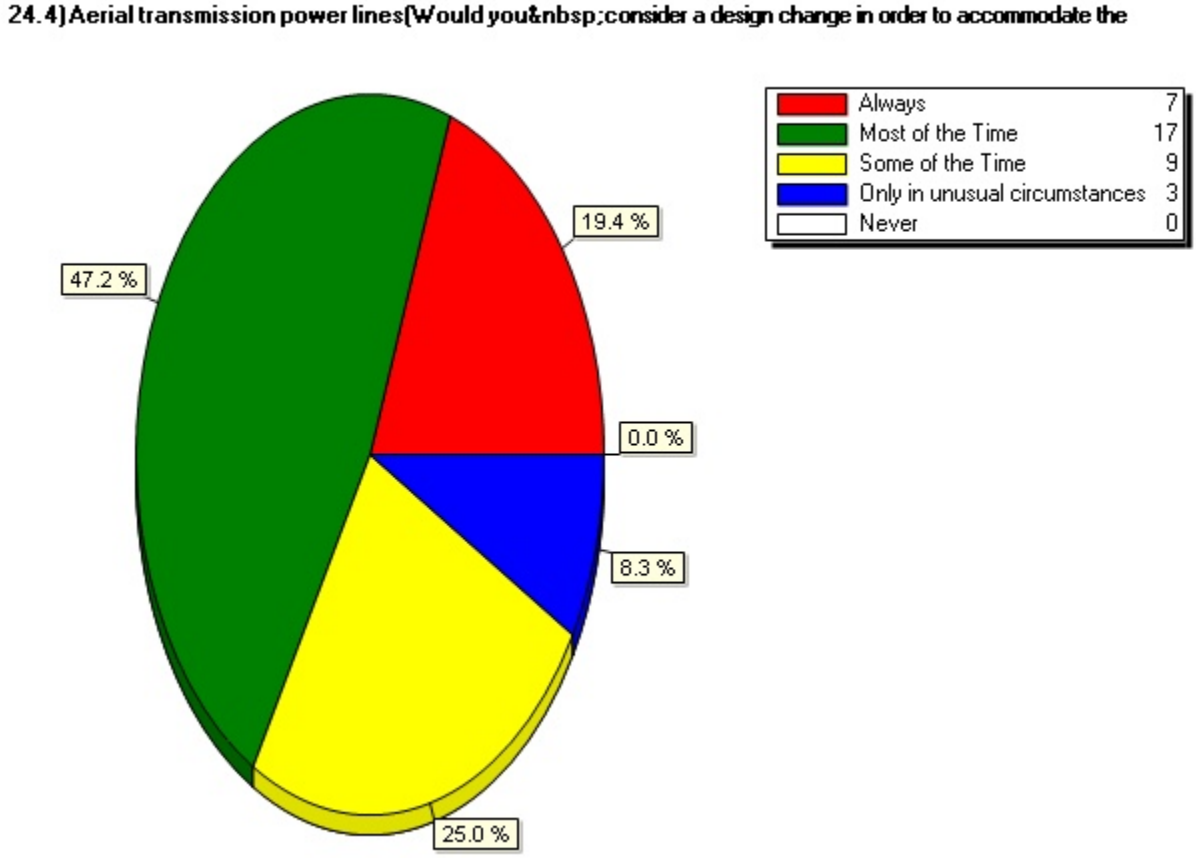
24.2) Distribution natural gas(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



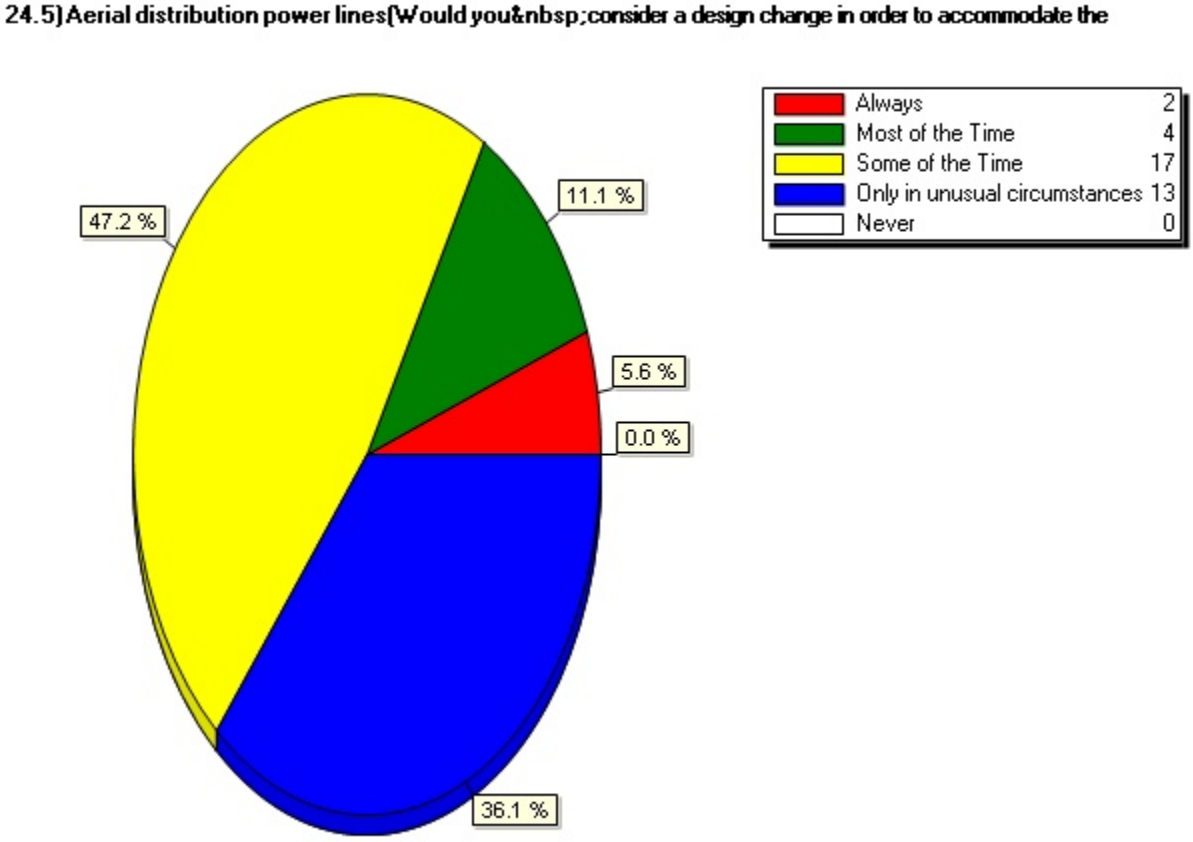
24.3) Water lines(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



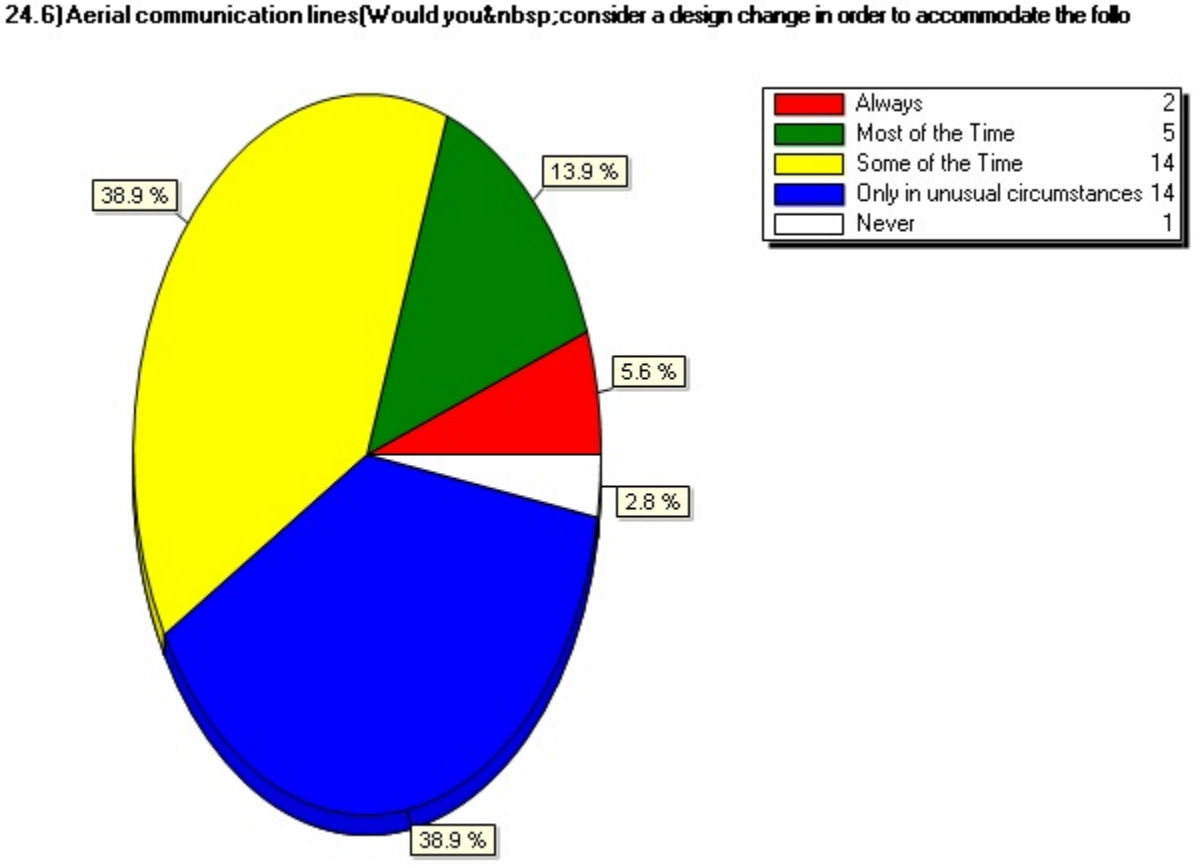
24.4) Aerial transmission power lines(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



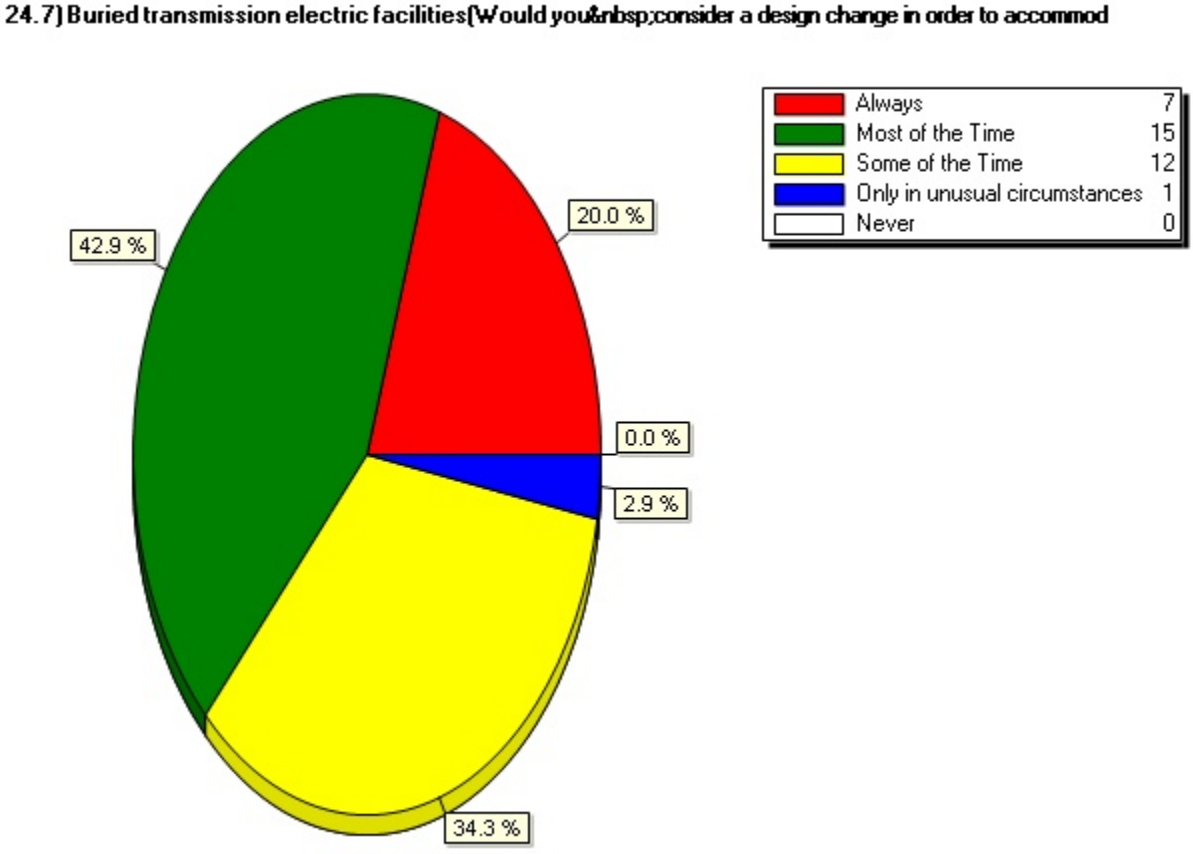
24.5) Aerial distribution power lines(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



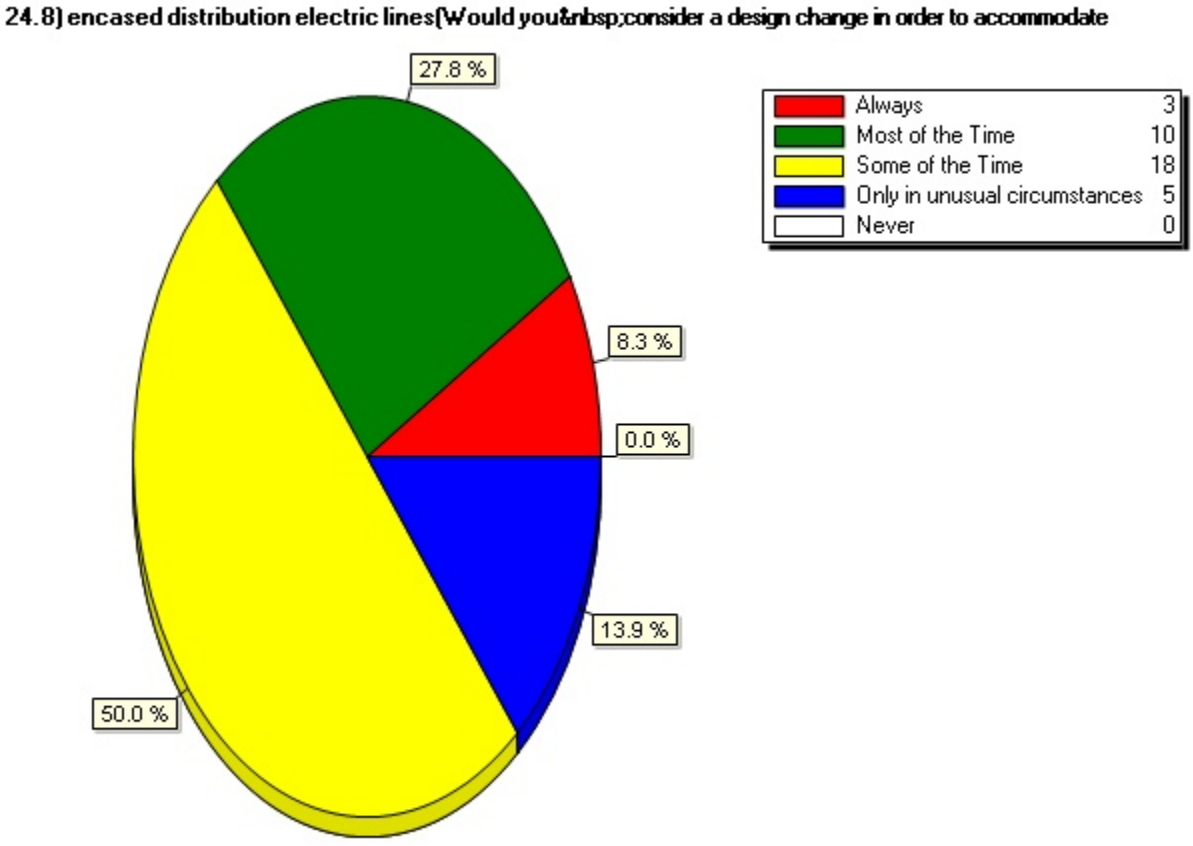
24.6) Aerial communication lines(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



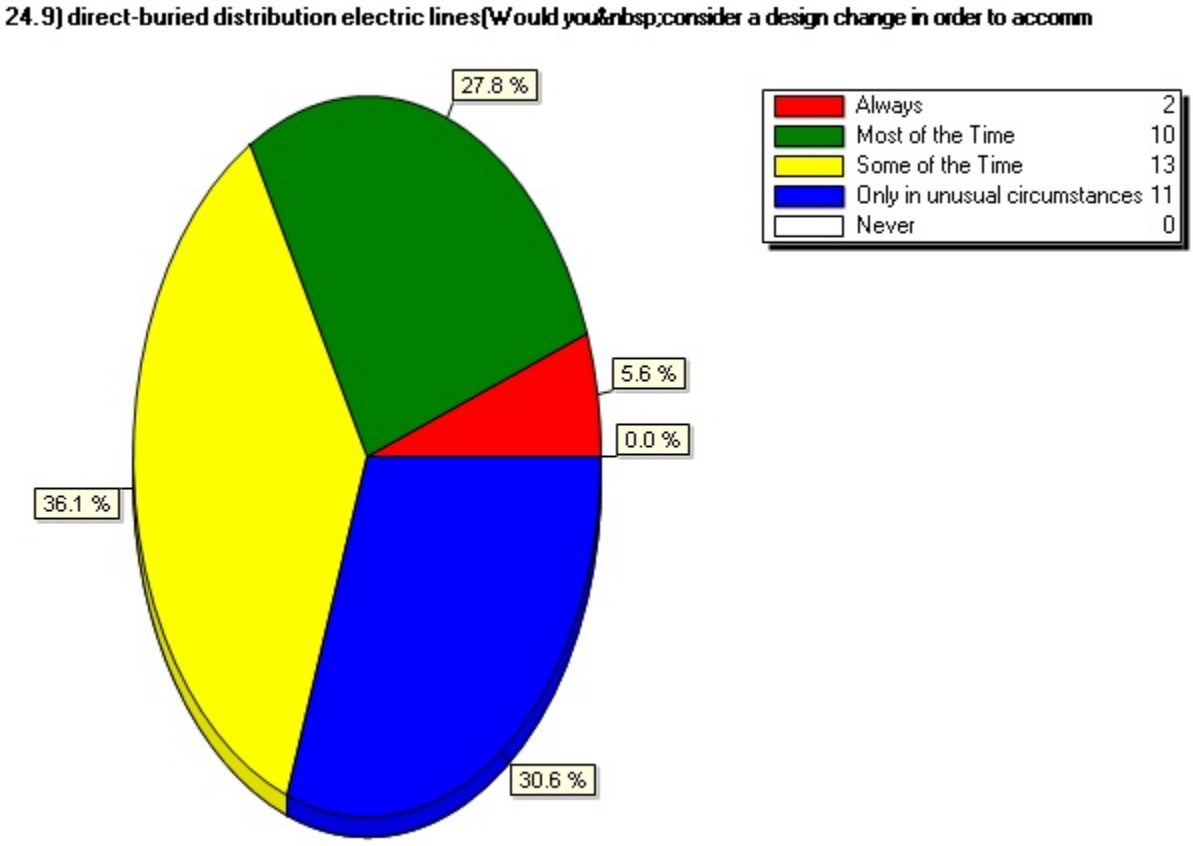
24.7) Buried transmission electric facilities(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



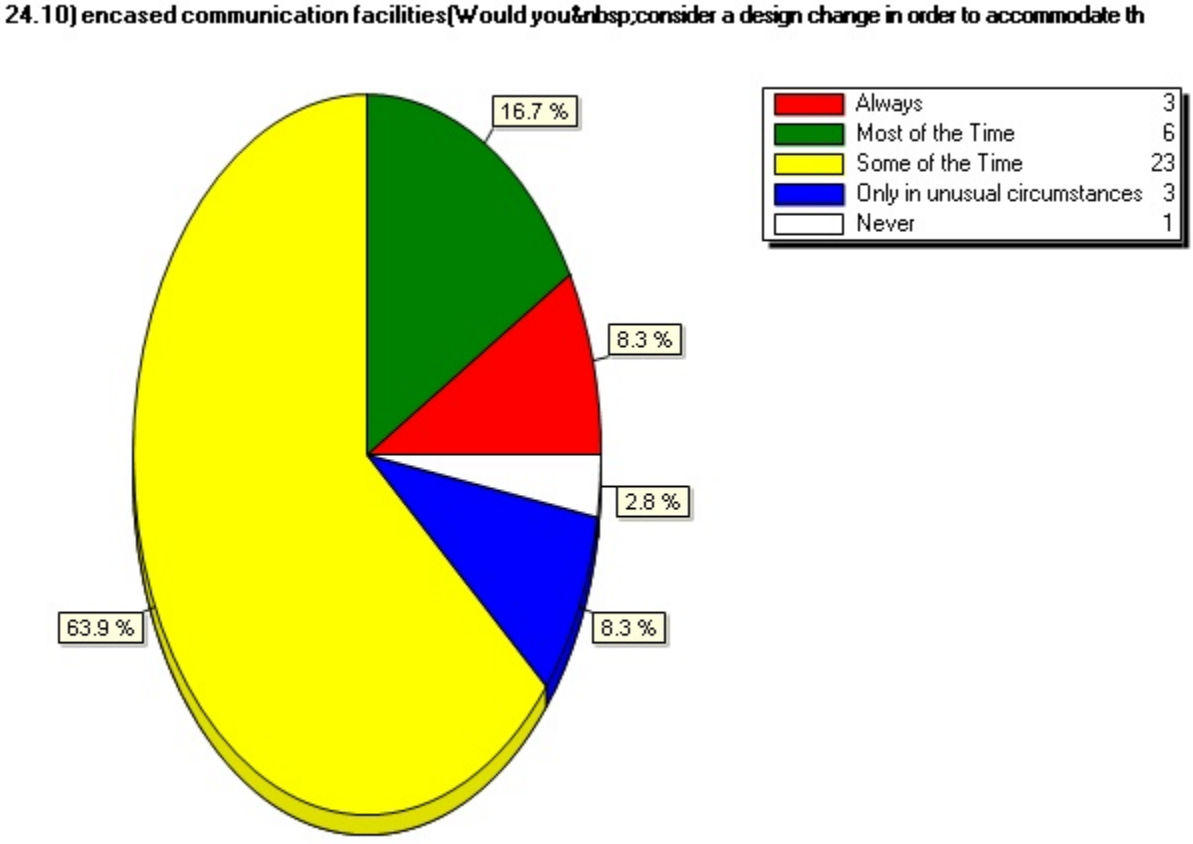
24.8) encased distribution electric lines(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



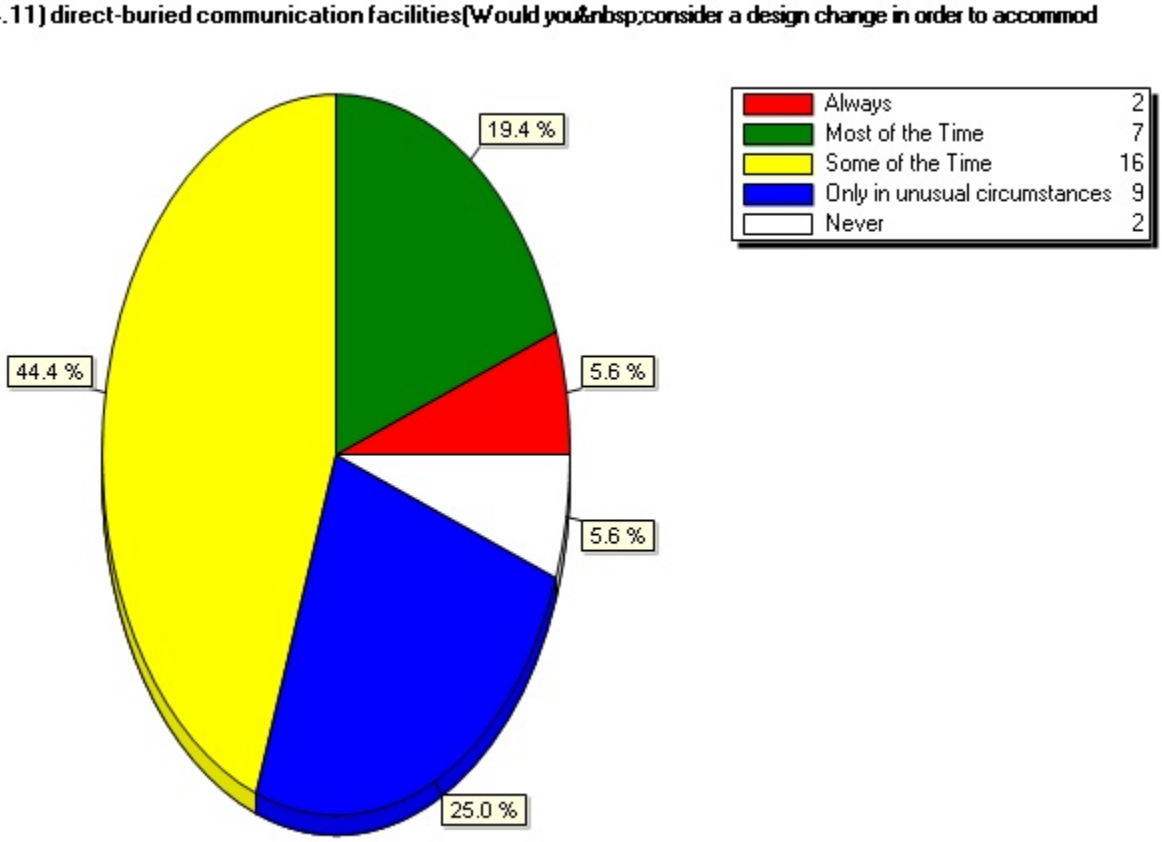
24.9) direct-buried distribution electric lines(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



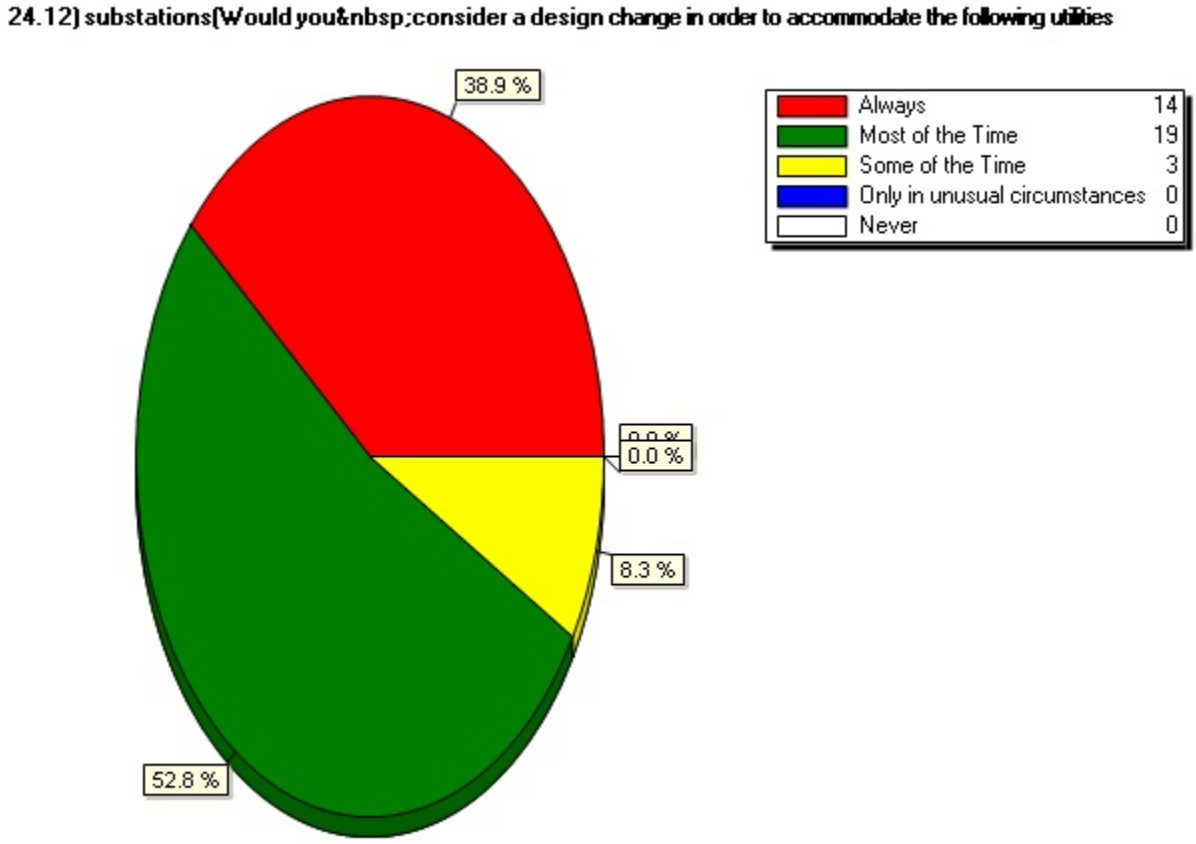
24.10) encased communication facilities(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



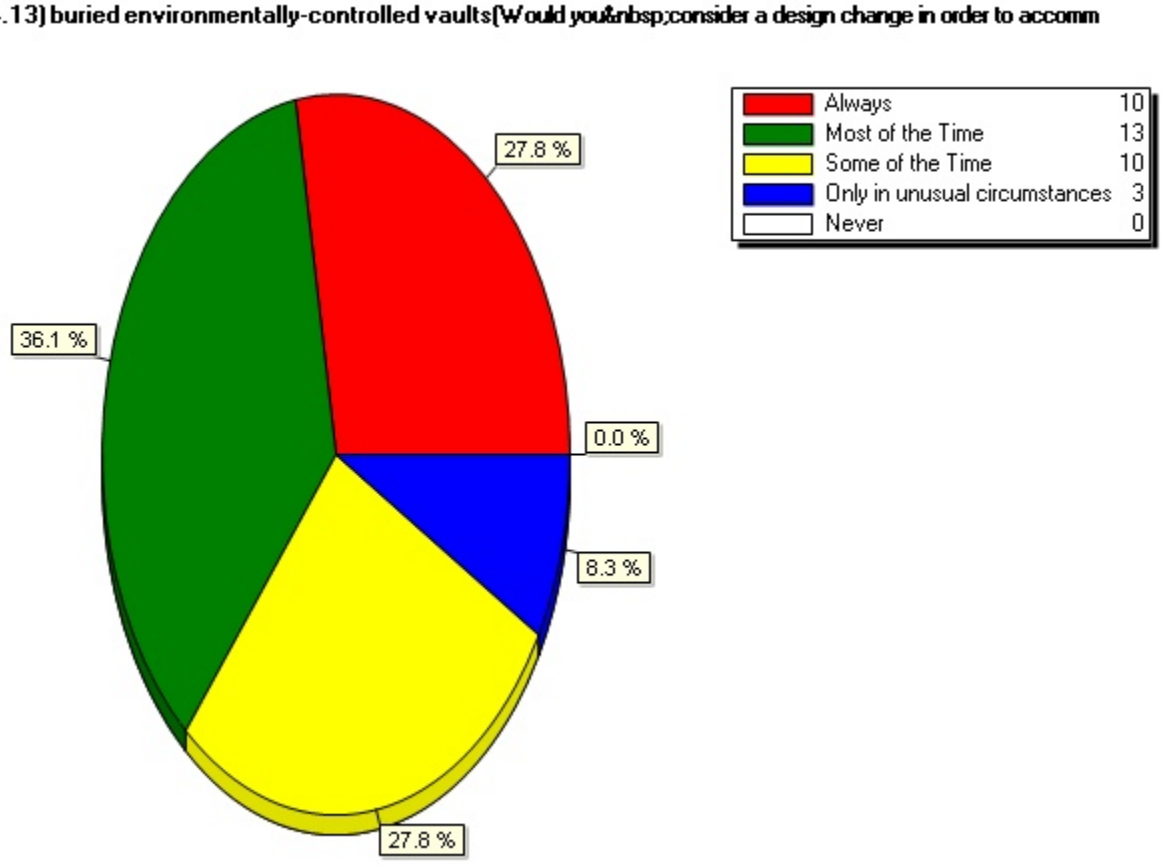
24.11) direct-buried communication facilities(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



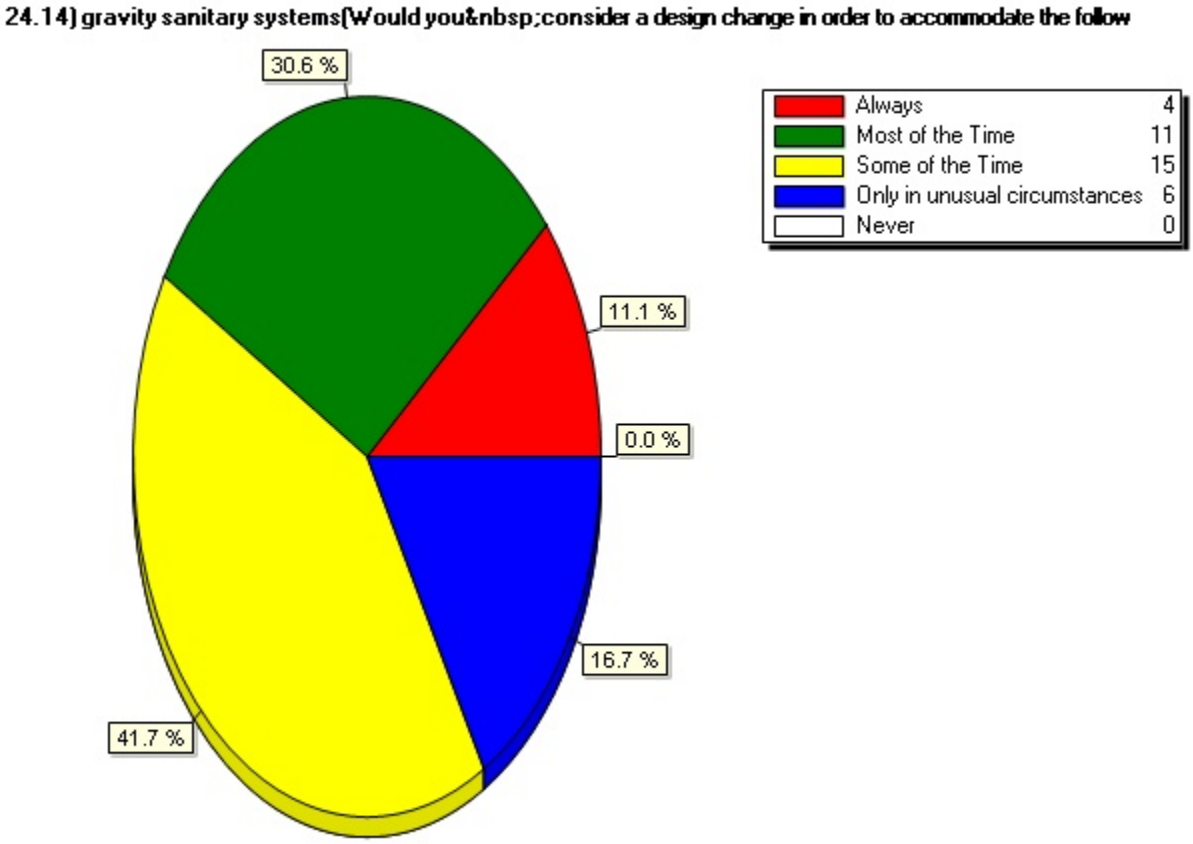
24.12) substations(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



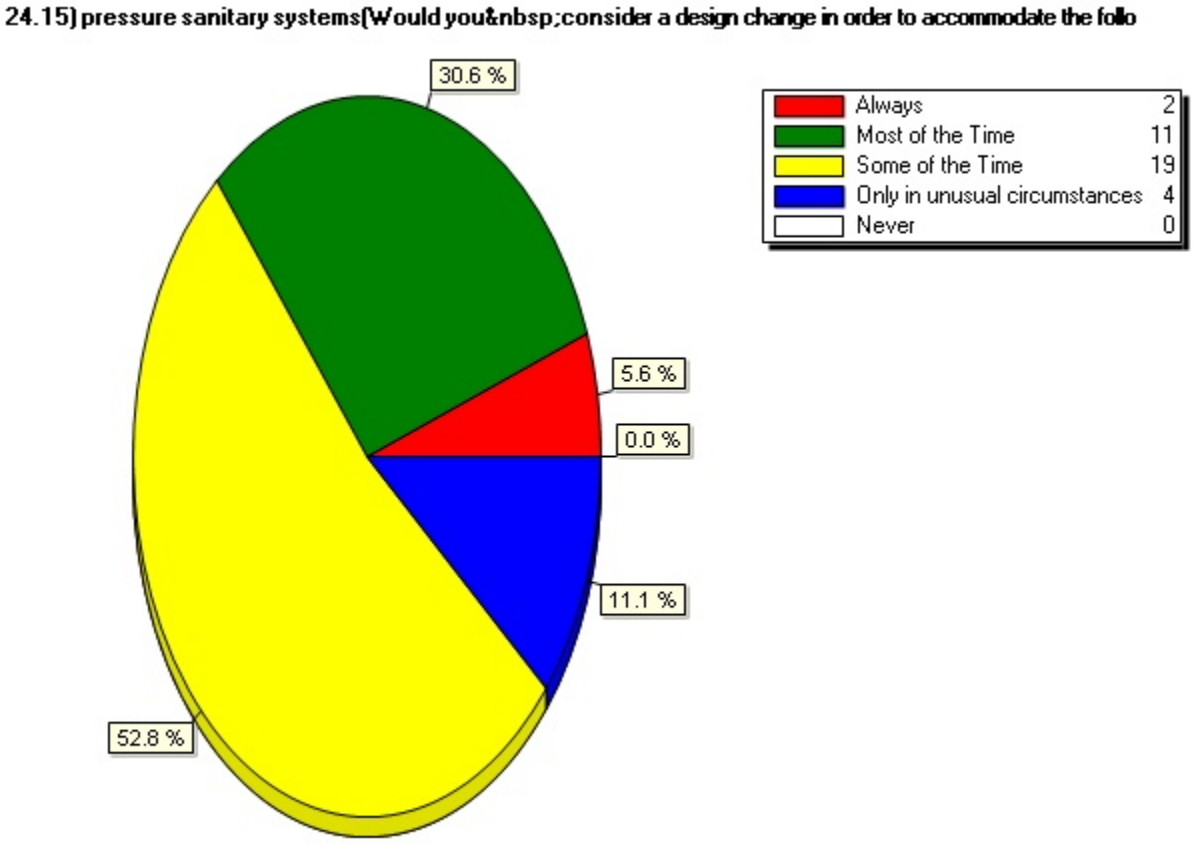
24.13) buried environmentally-controlled vaults(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



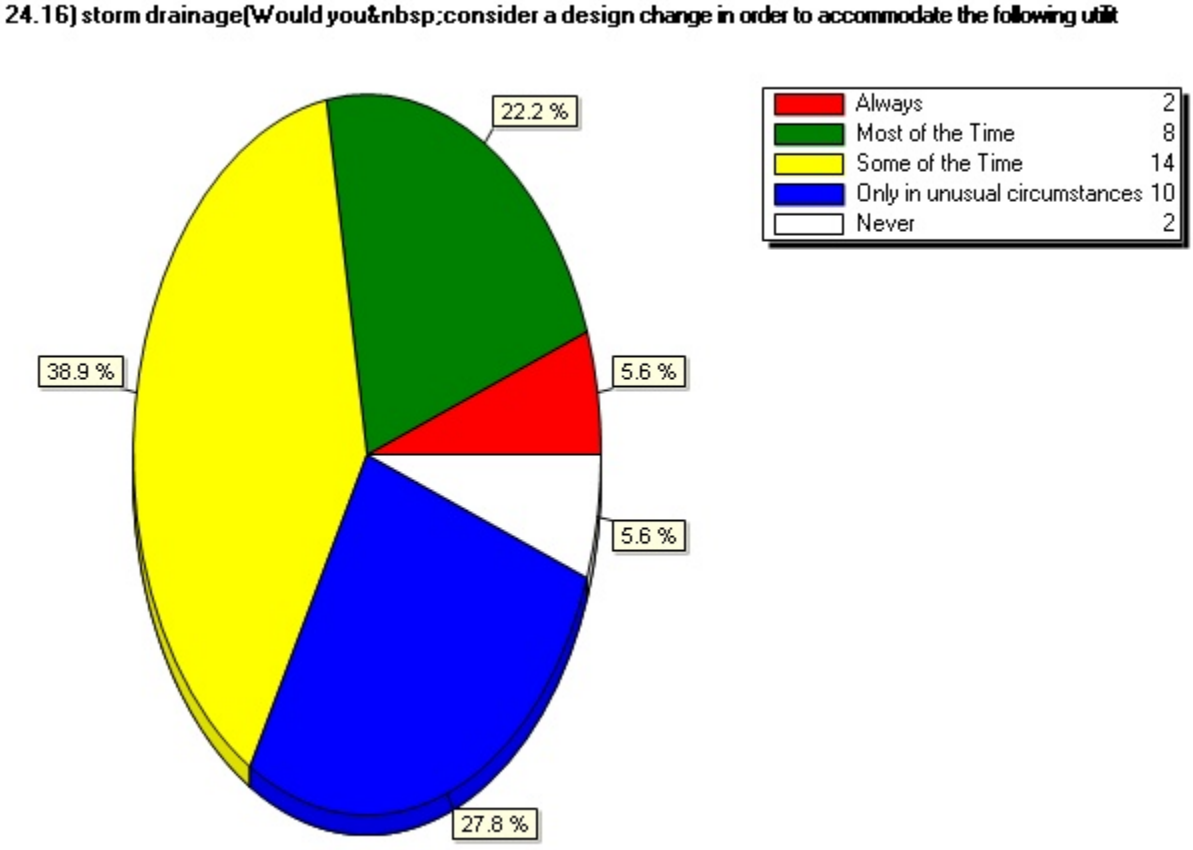
24.14) gravity sanitary systems(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



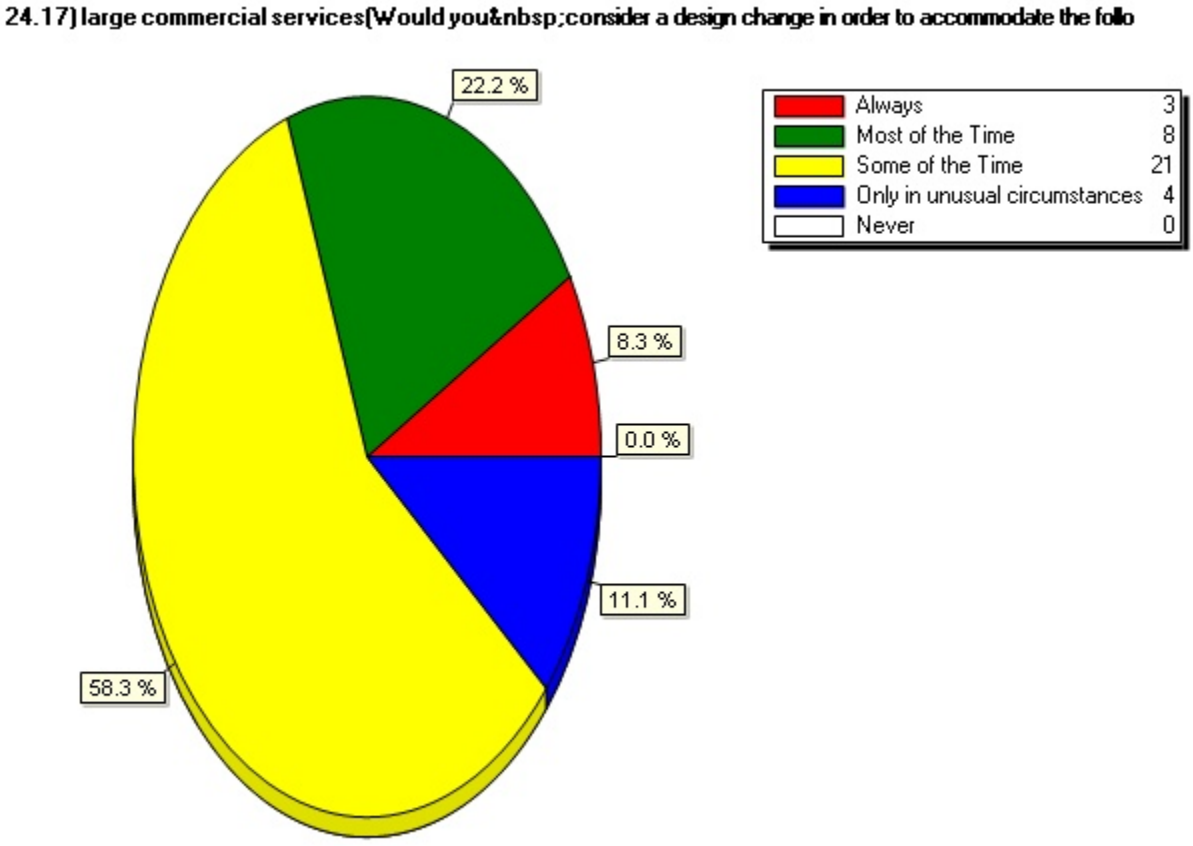
24.15) pressure sanitary systems(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



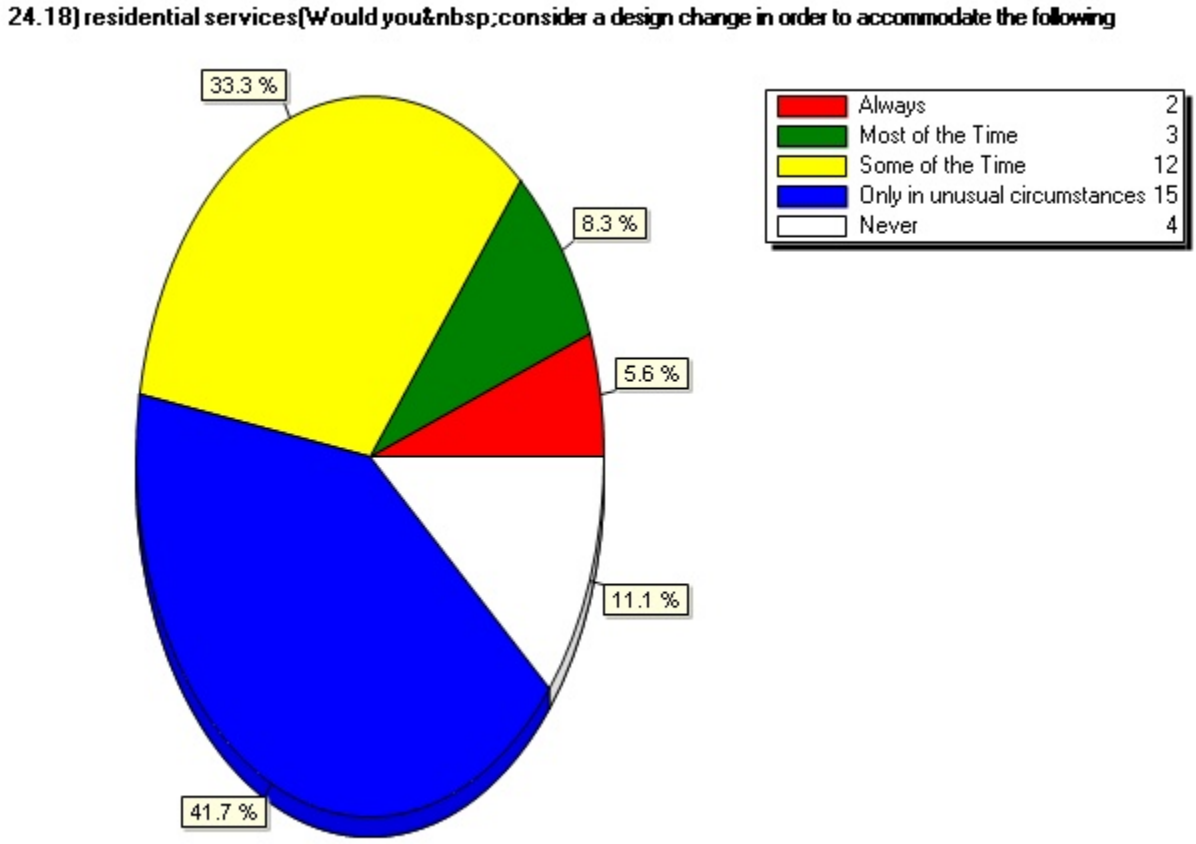
24.16) storm drainage(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



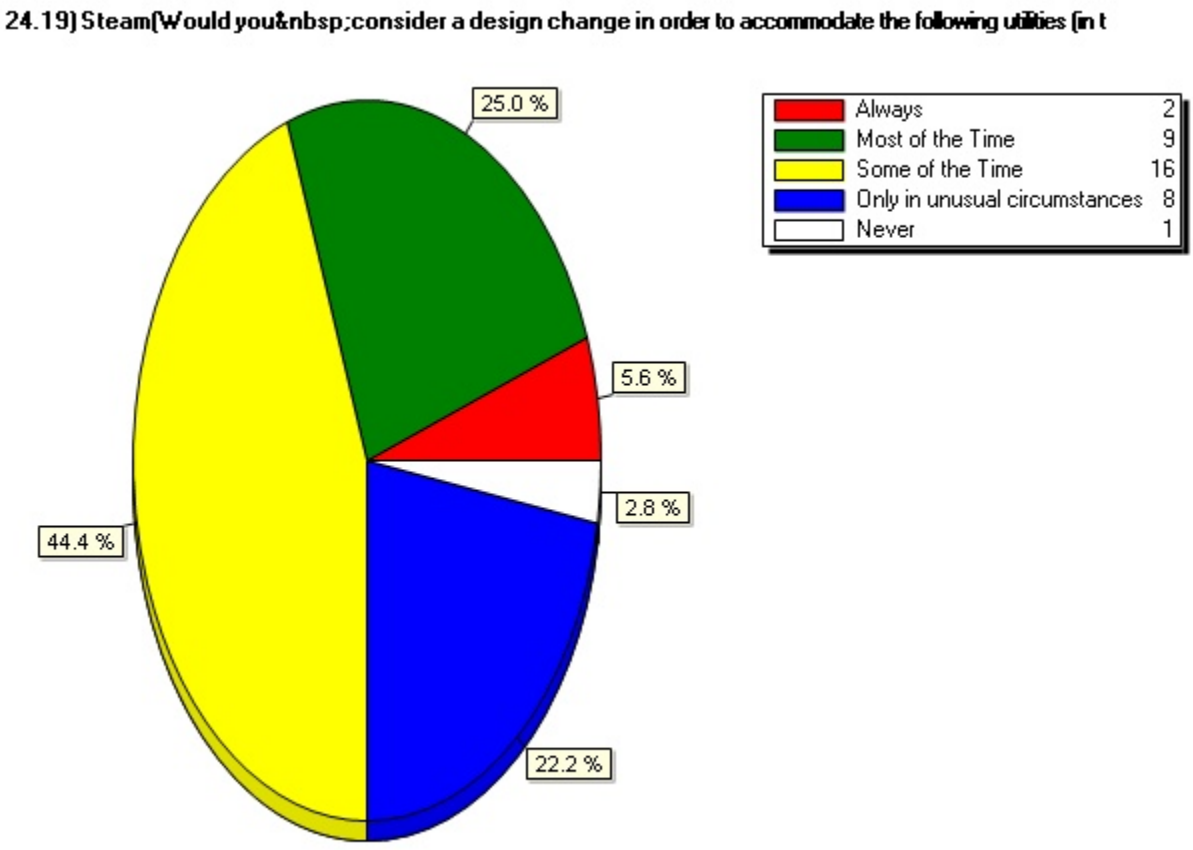
24.17) large commercial services(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



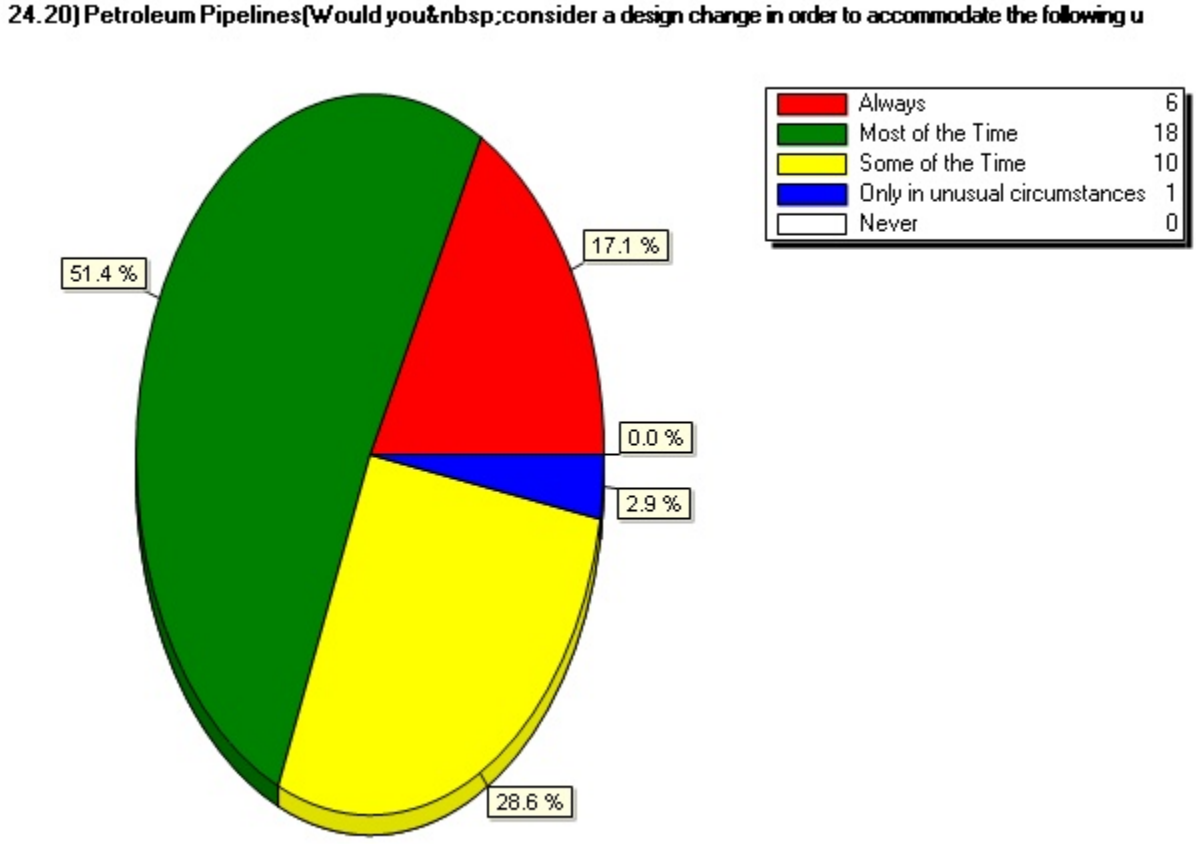
24.18) residential services(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



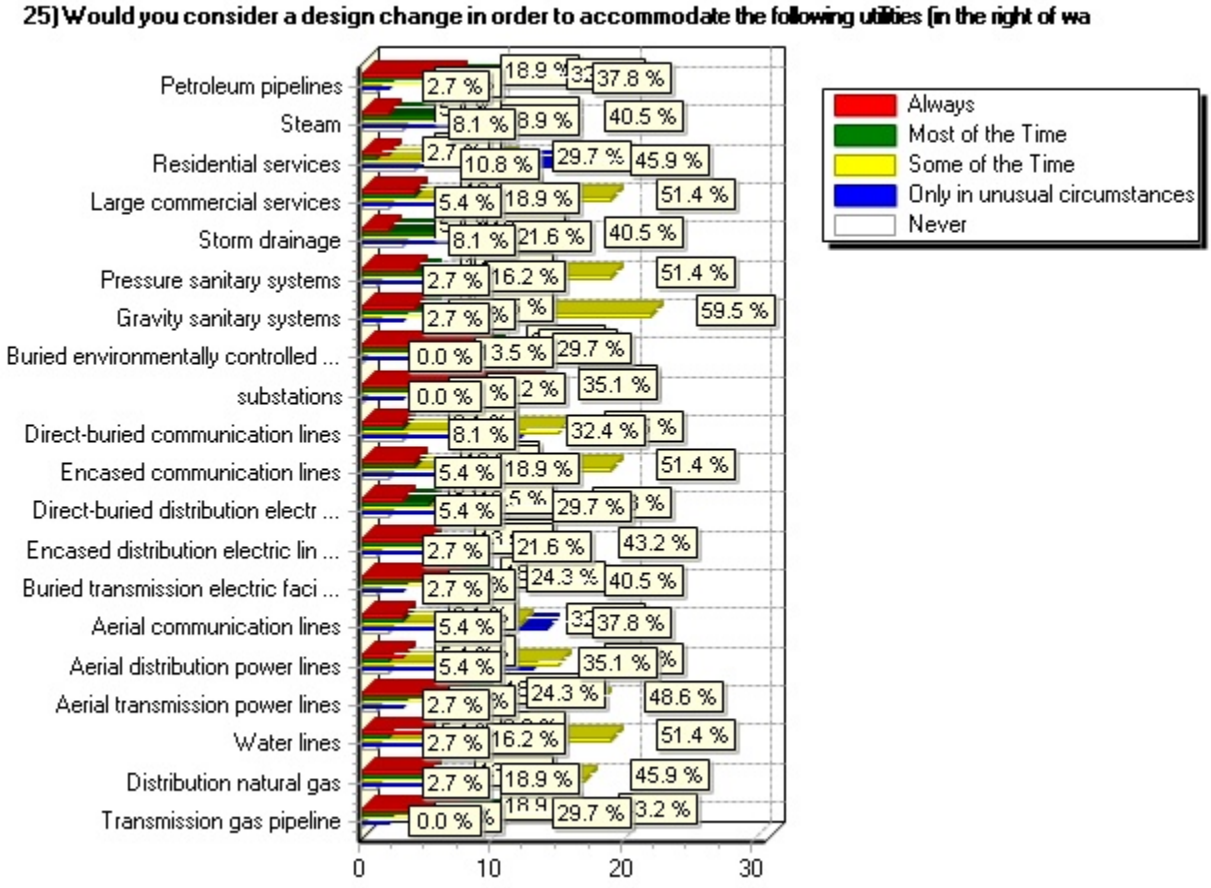
24.19) Steam(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



24.20) Petroleum Pipelines(Would you consider a design change in order to accommodate the following utilities (in their own easements) in conflict with the highway design?)



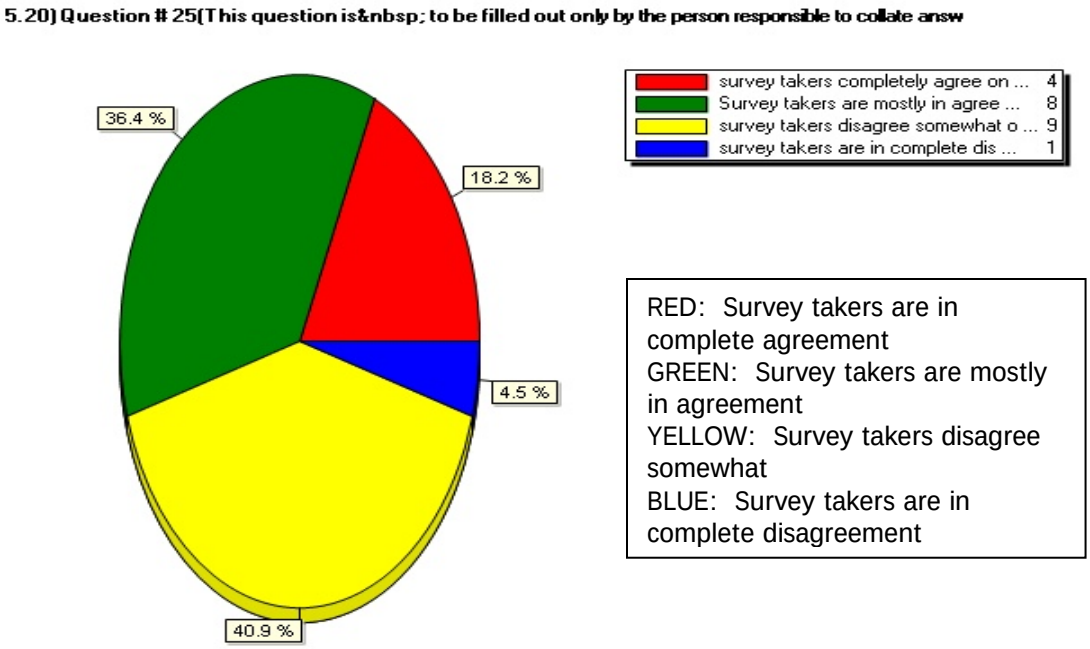
25) Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design? The official DOT response was:



Comment Responses:

Everything should be considered.
All are case by case.
We "always" consider all
each case is considered on its own merit
Require by law
little diff permits vs prop interest
based on impact to design and timelines
We would design around if possible

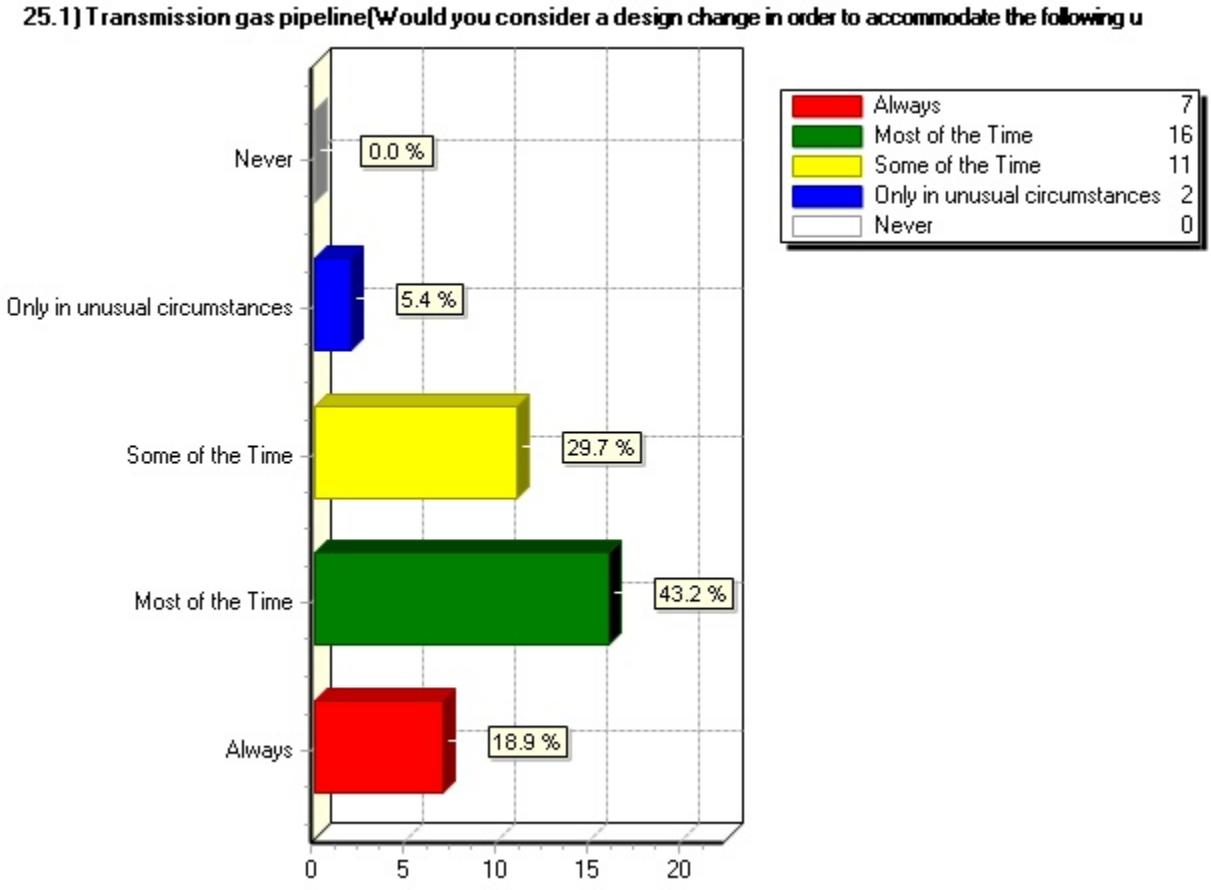
However, within the DOT there was the following diversity of opinion to the official response.



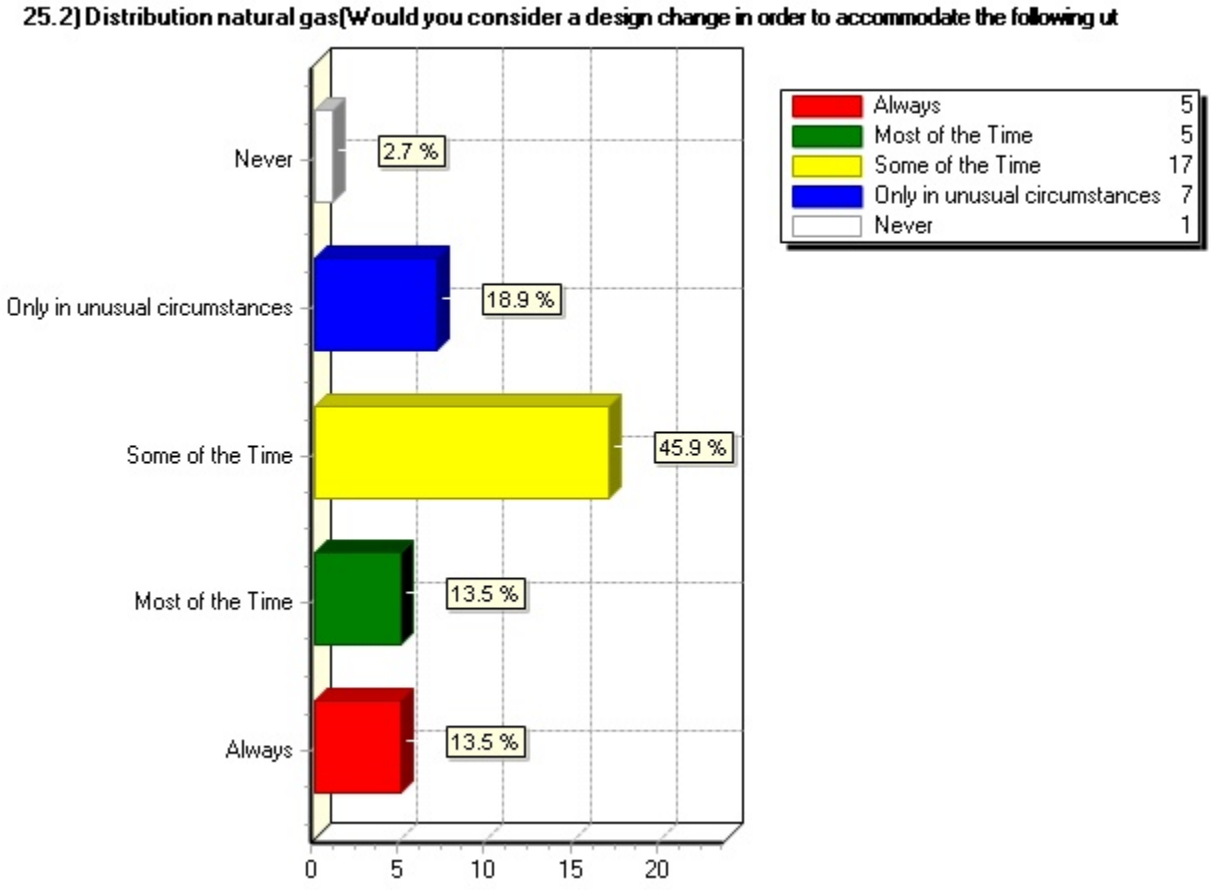
RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

Here is the detailed response for each question asked in # 25.

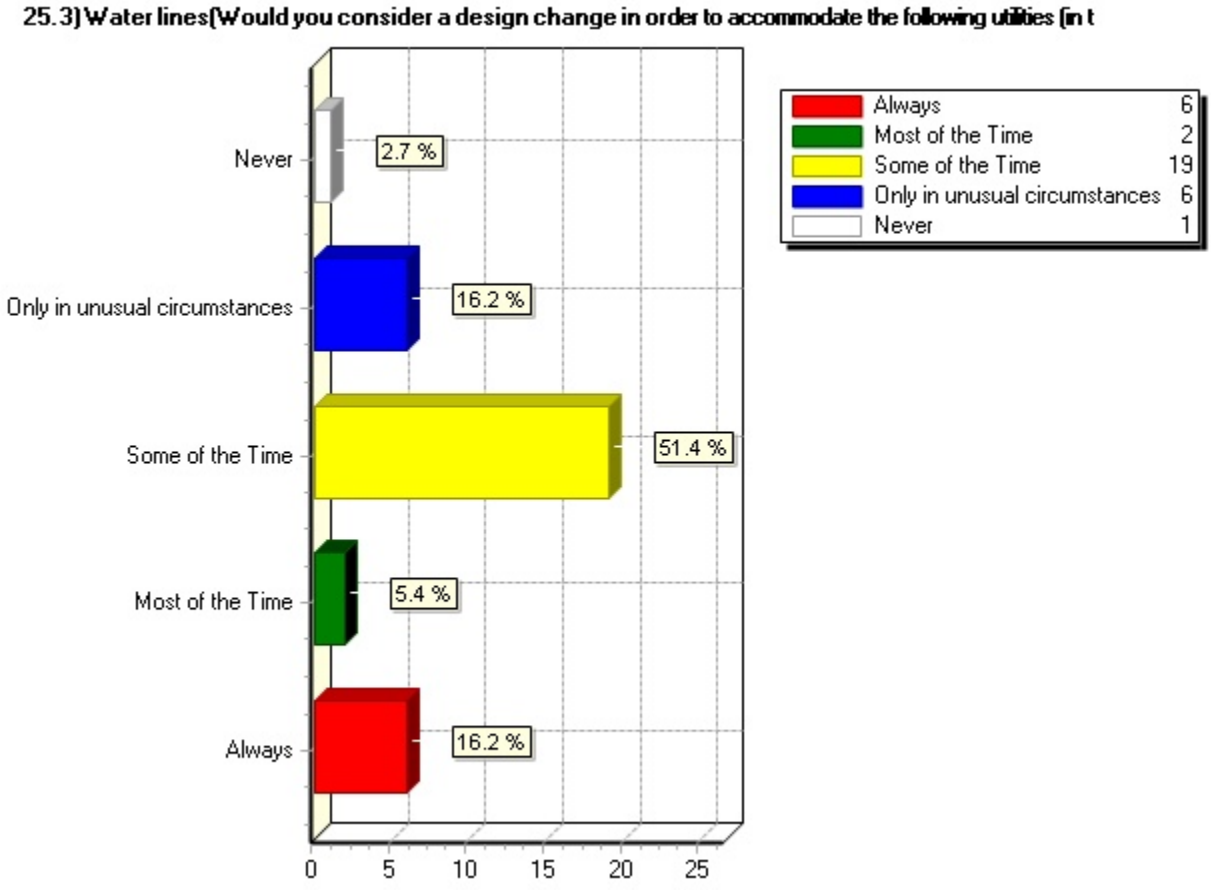
25.1) Transmission gas pipeline(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



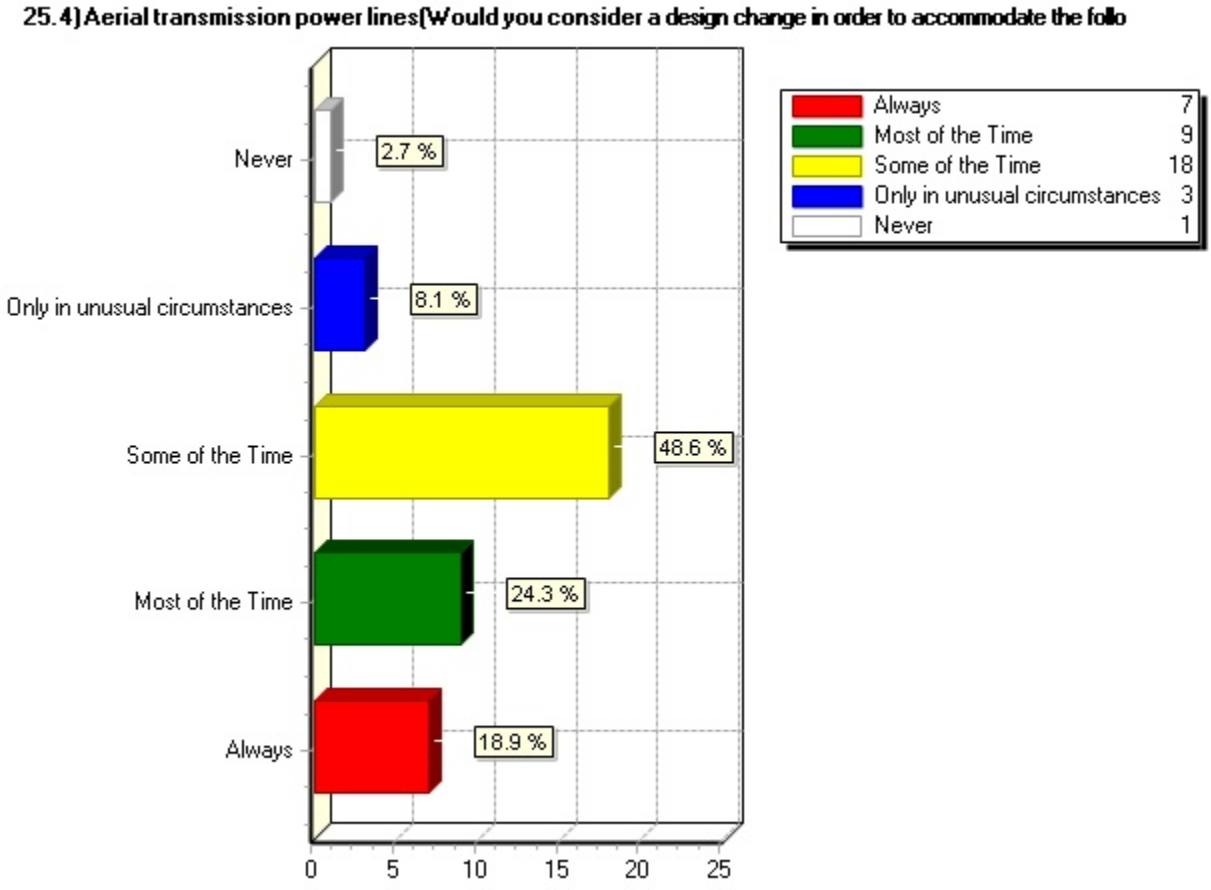
25.2) Distribution natural gas(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



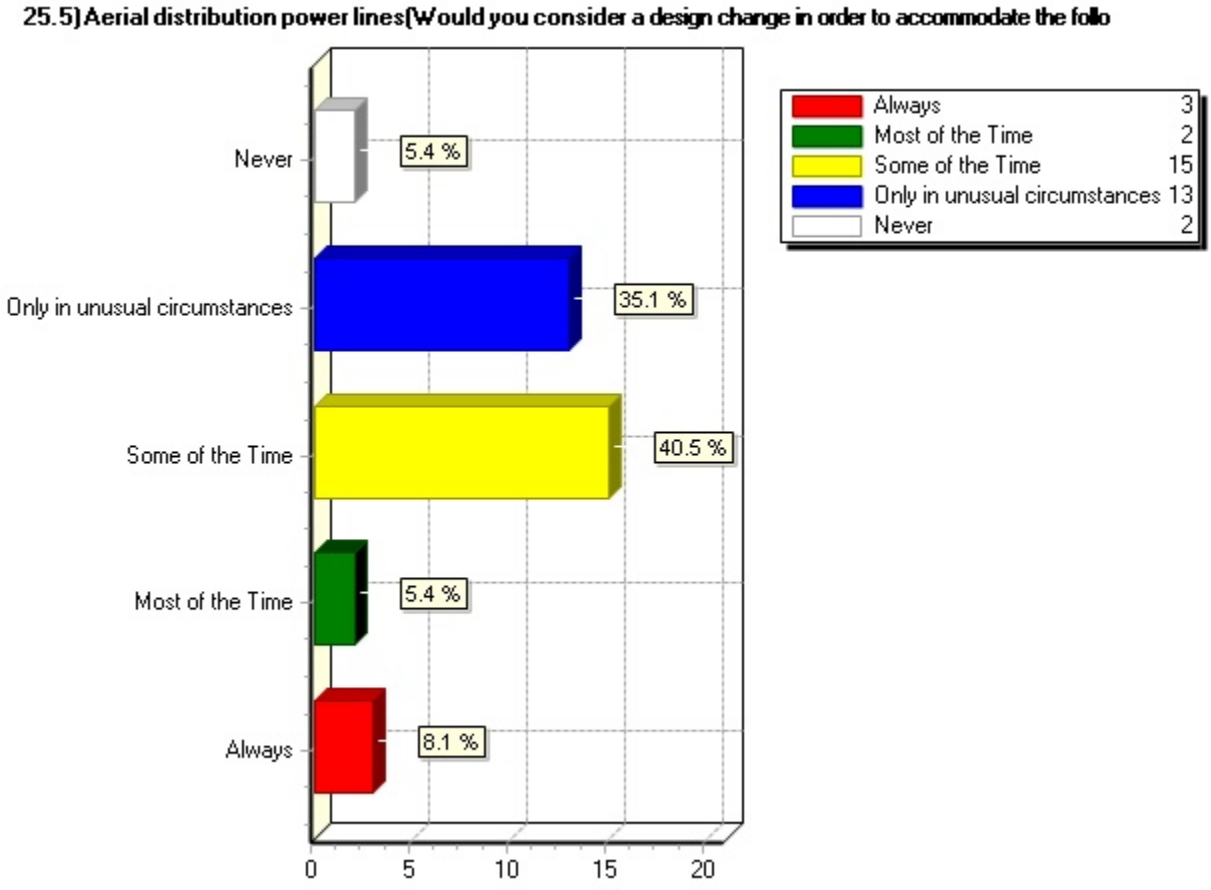
25.3) Water lines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



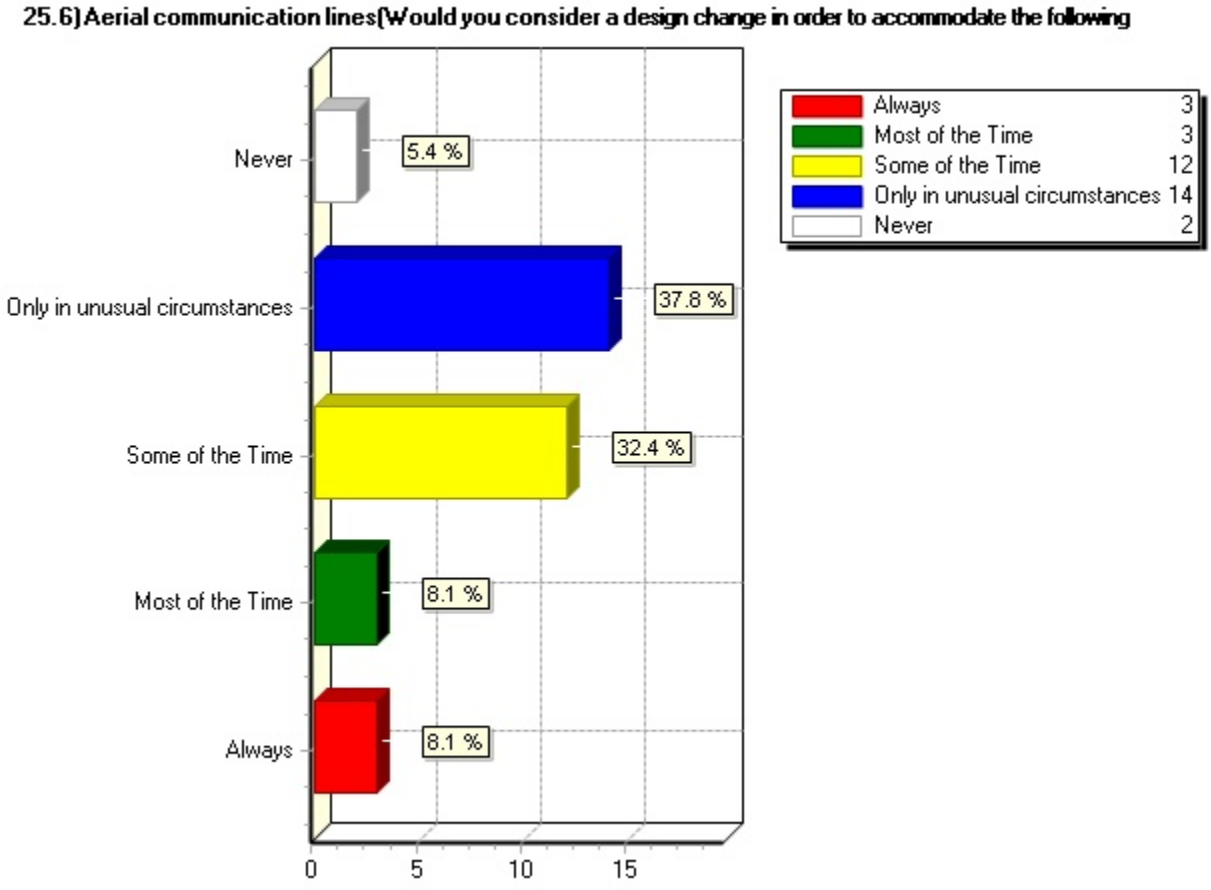
25.4) Aerial transmission power lines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



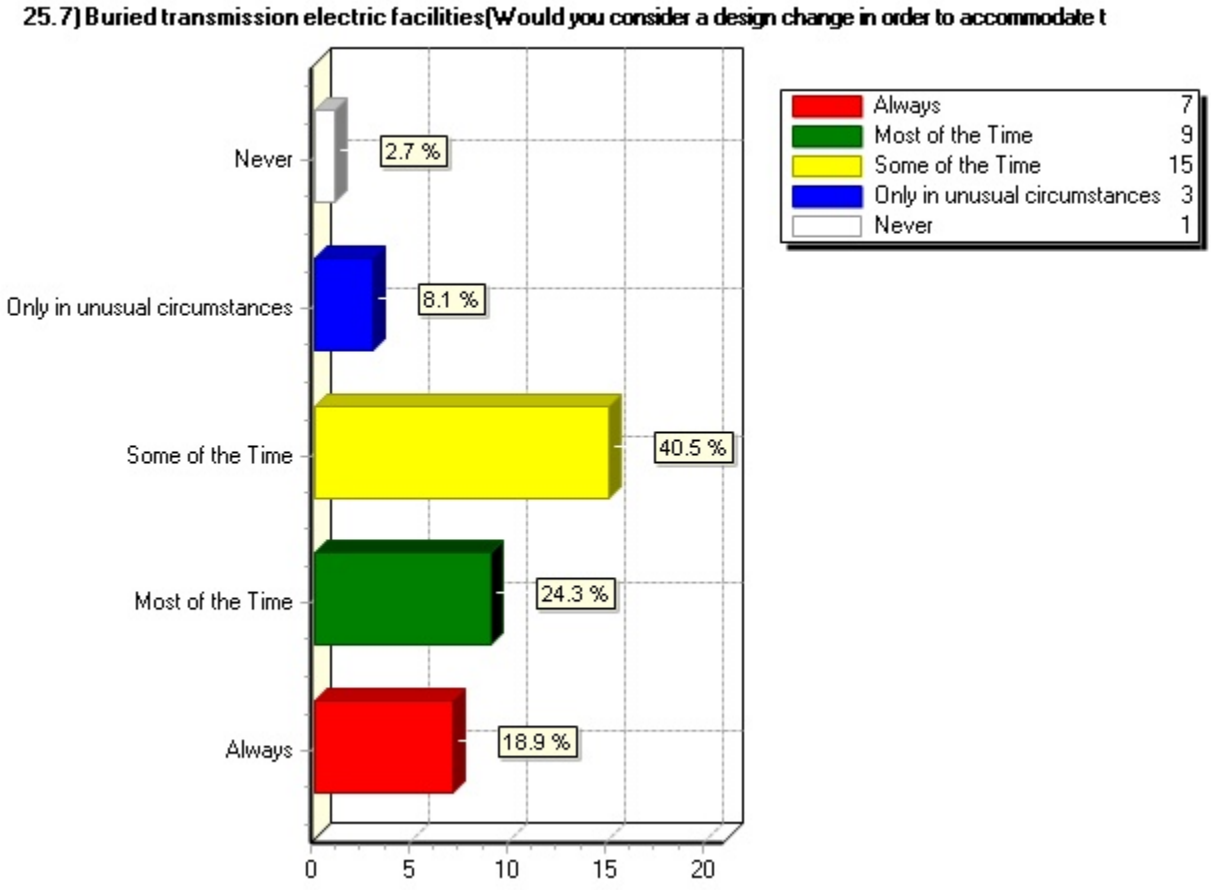
25.5) Aerial distribution power lines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



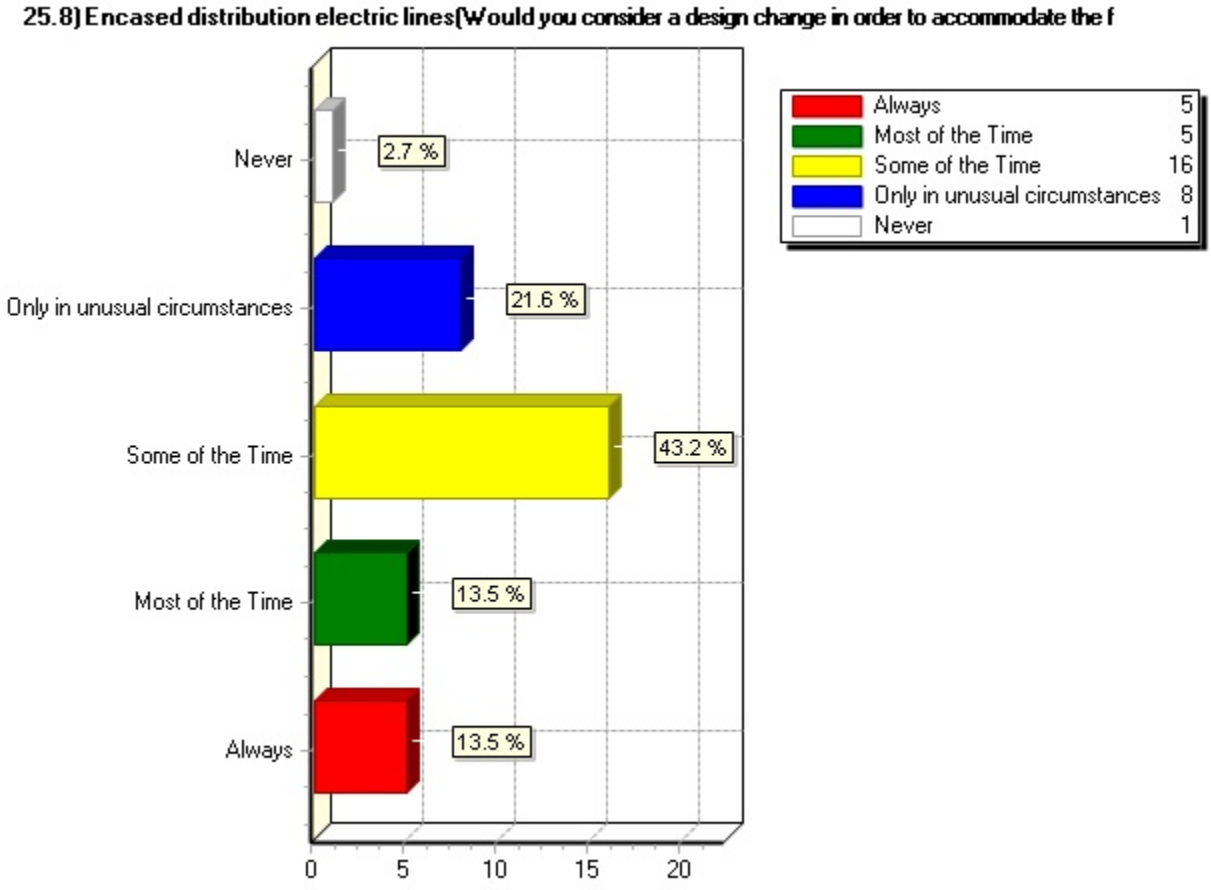
25.6) Aerial communication lines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



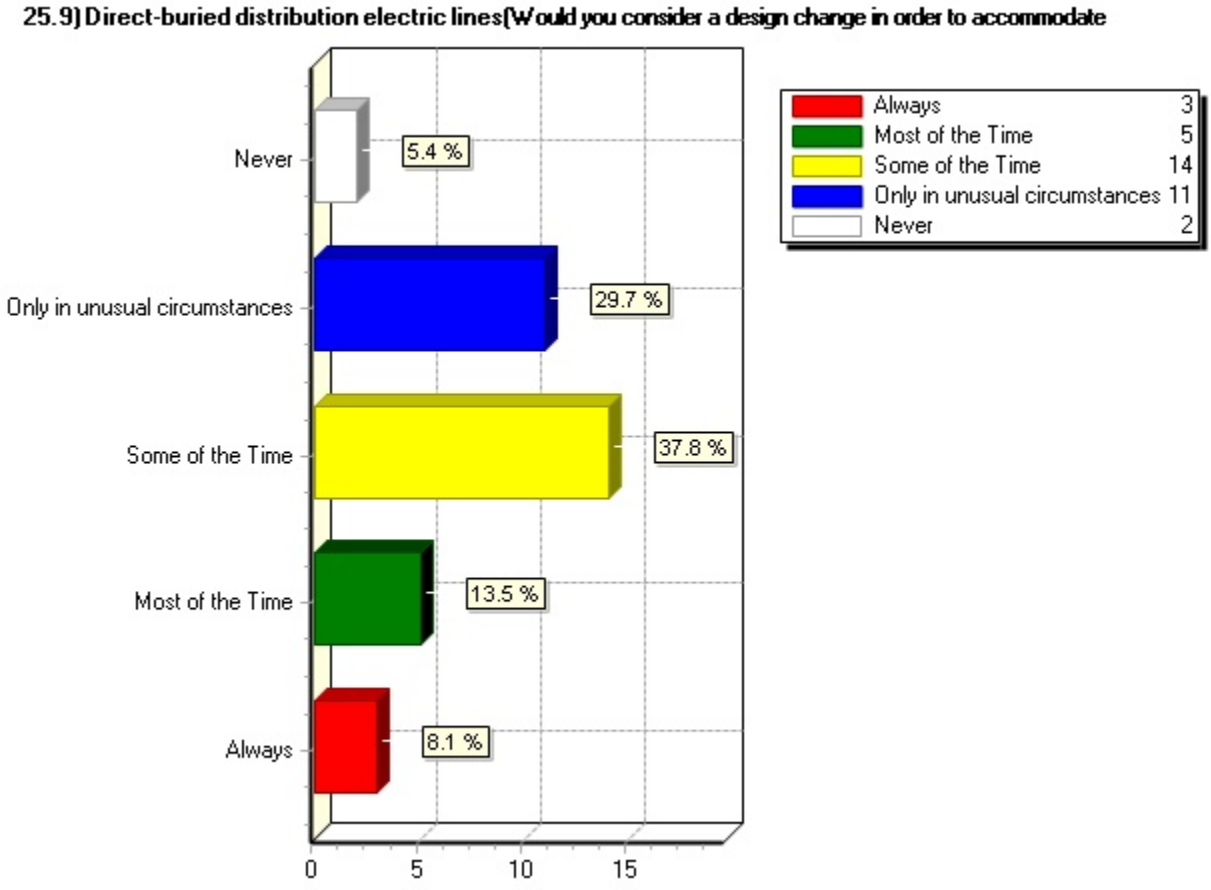
25.7) Buried transmission electric facilities(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



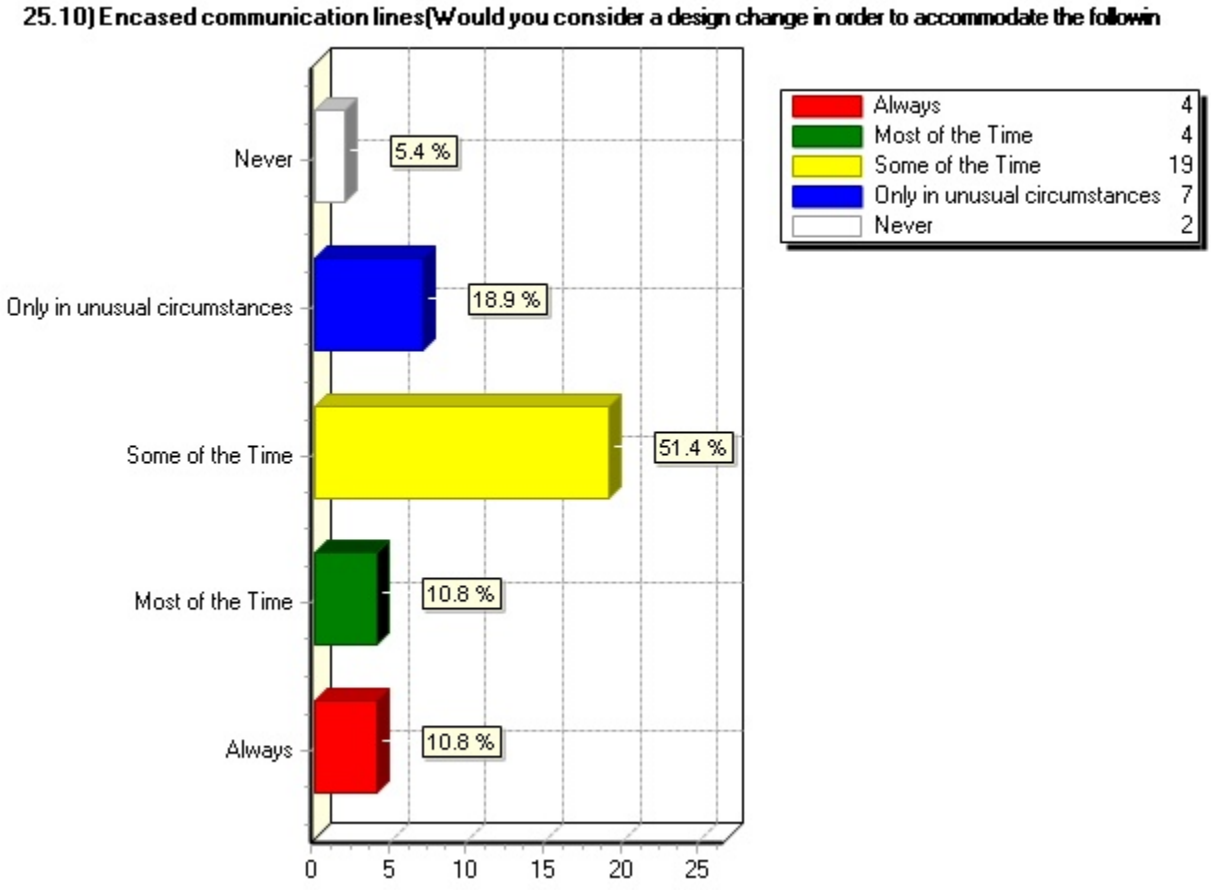
25.8) Encased distribution electric lines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



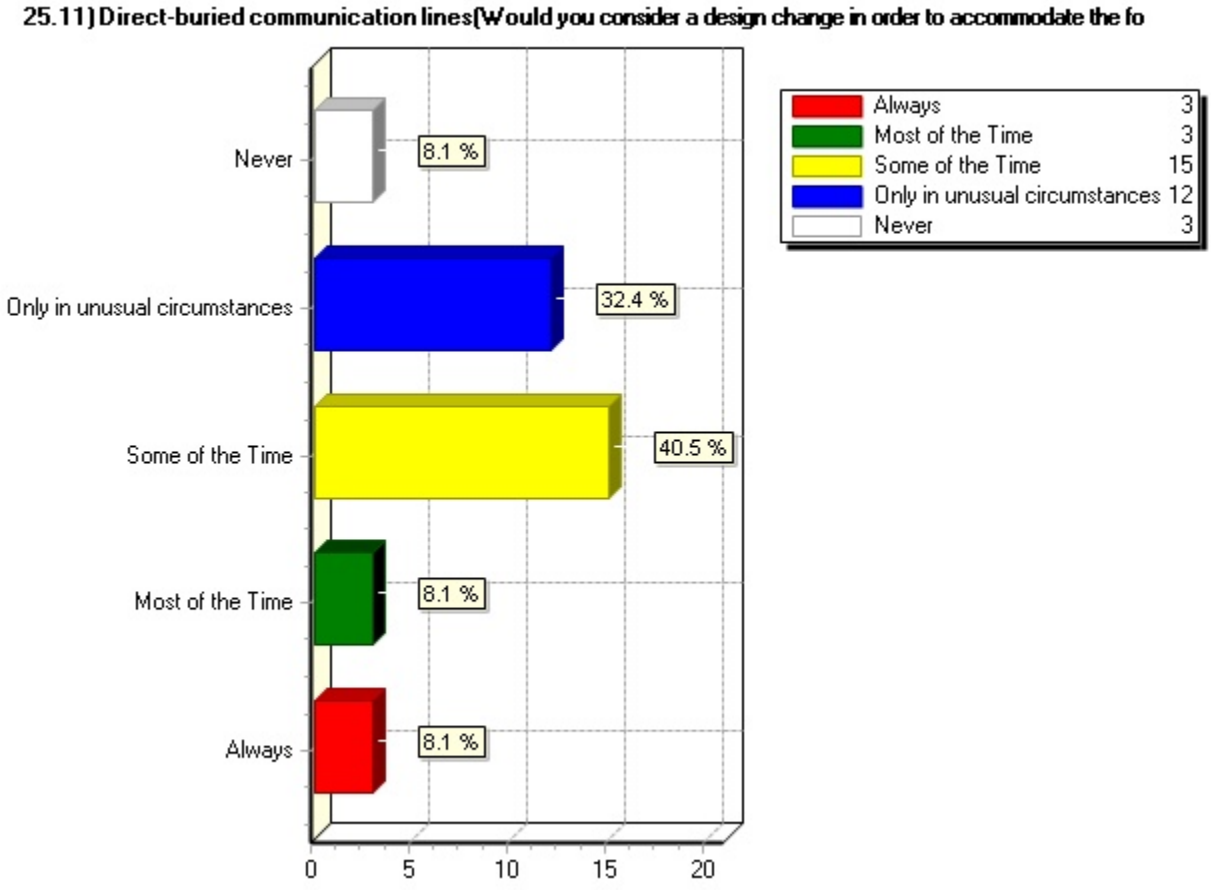
25.9) Direct-buried distribution electric lines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



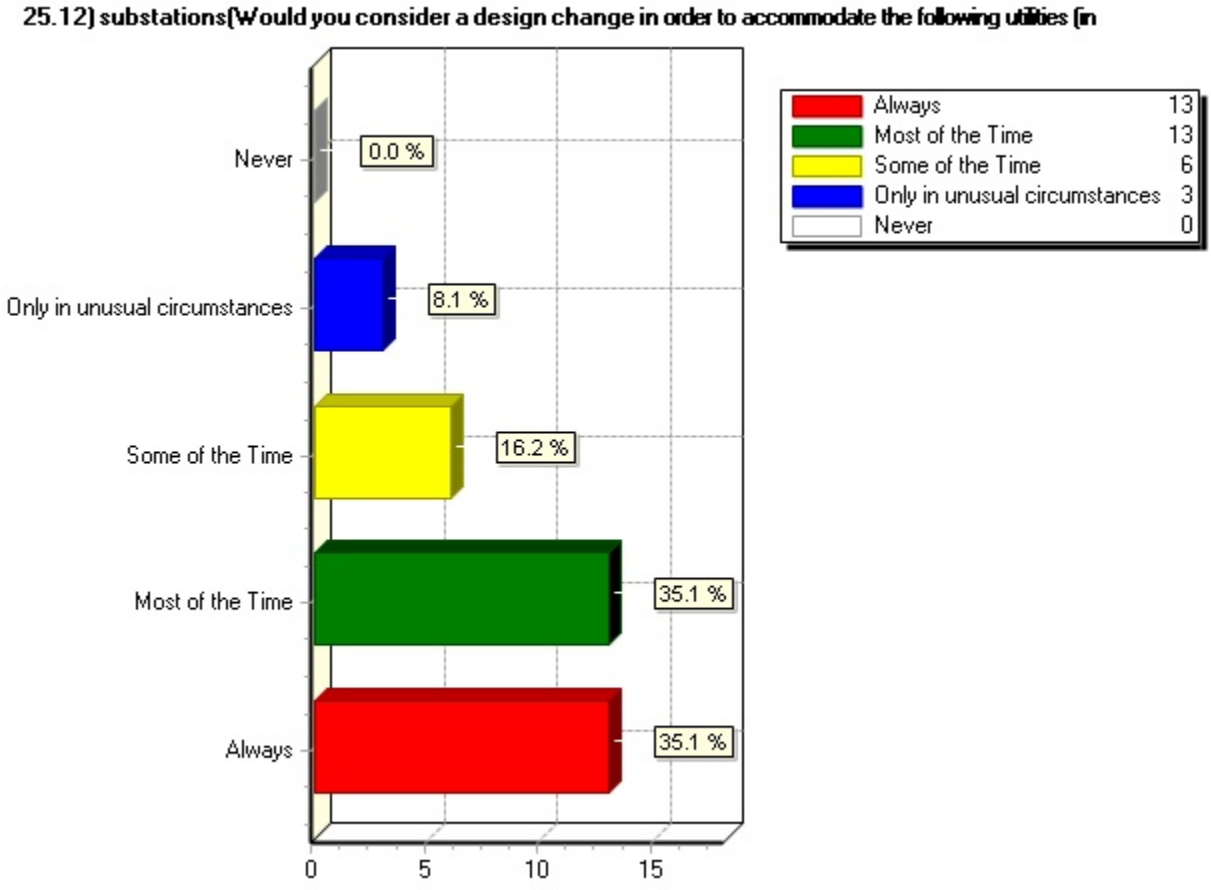
25.10) Encased communication lines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



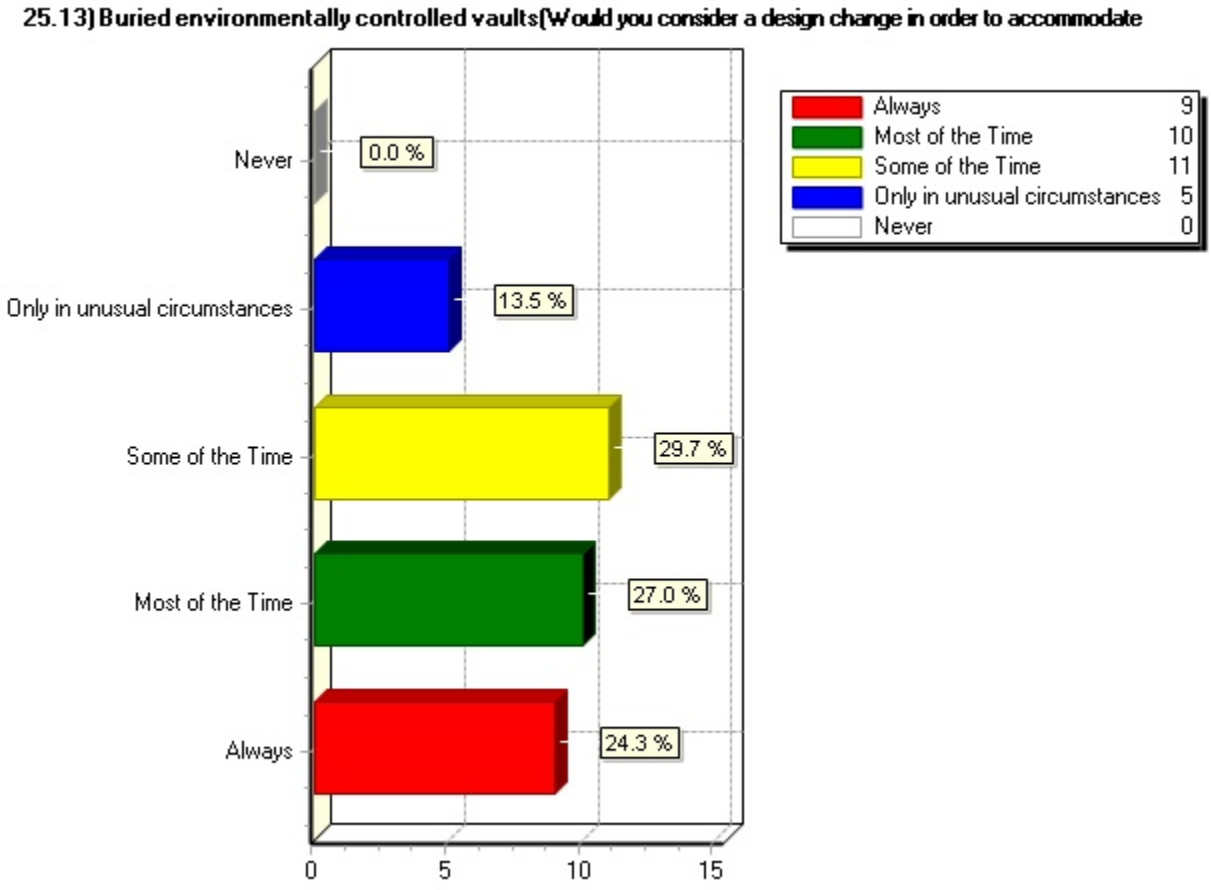
25.11) Direct-buried communication lines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



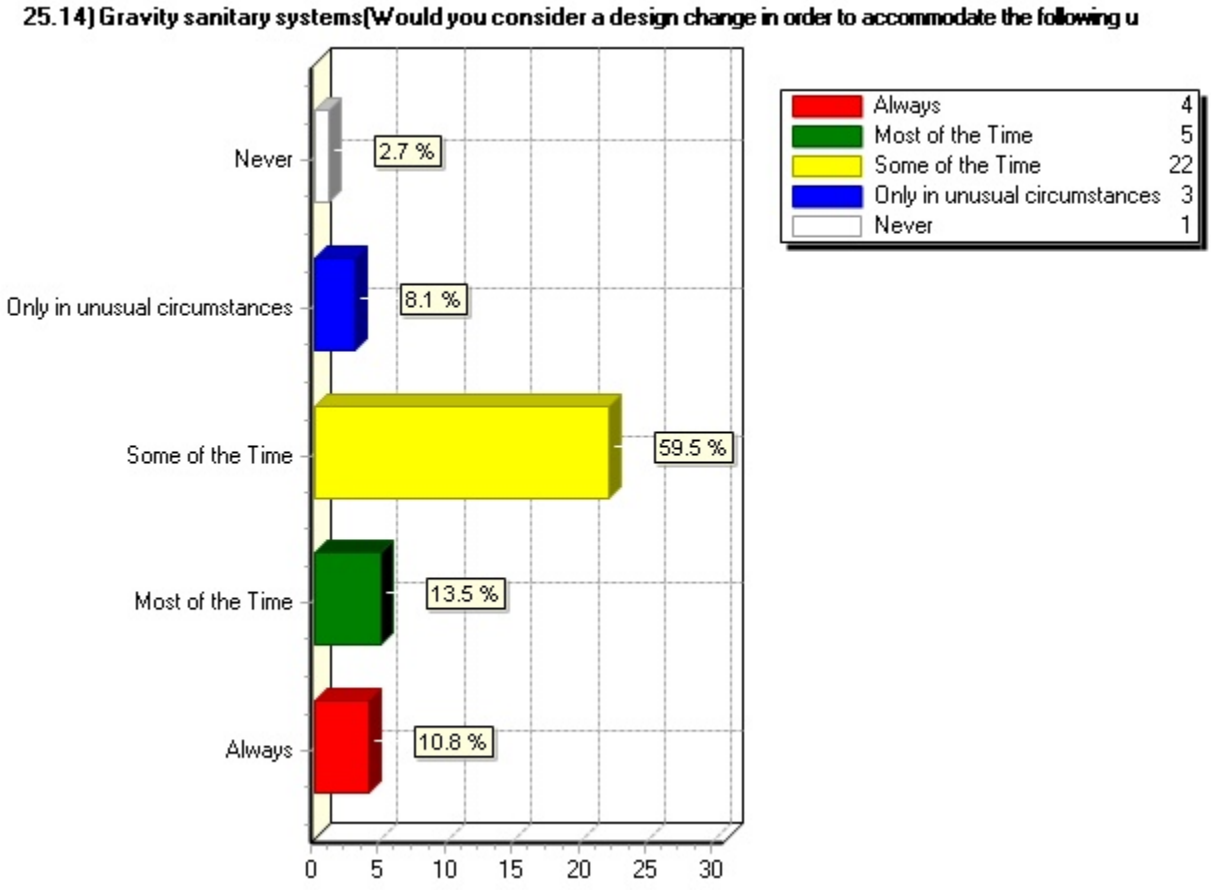
25.12) substations(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



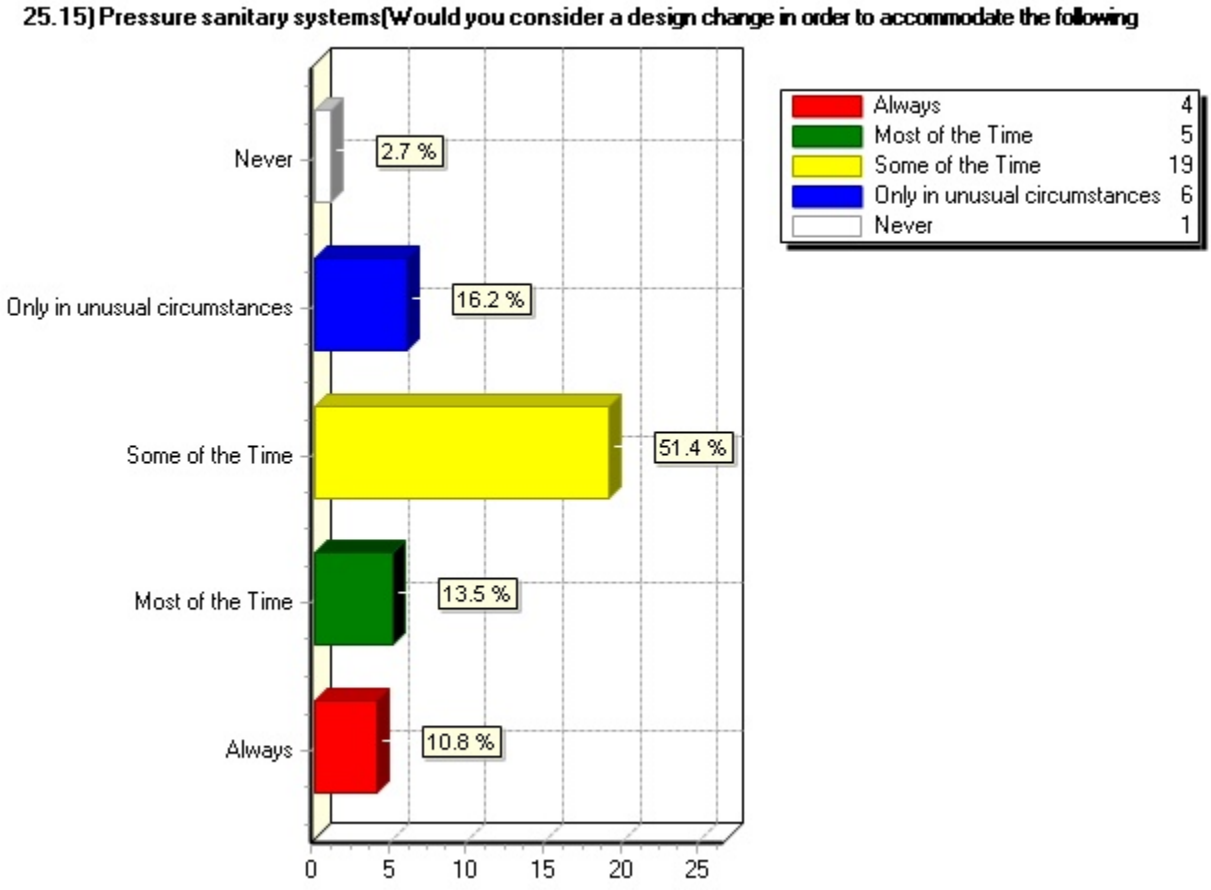
25.13) Buried environmentally controlled vaults(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



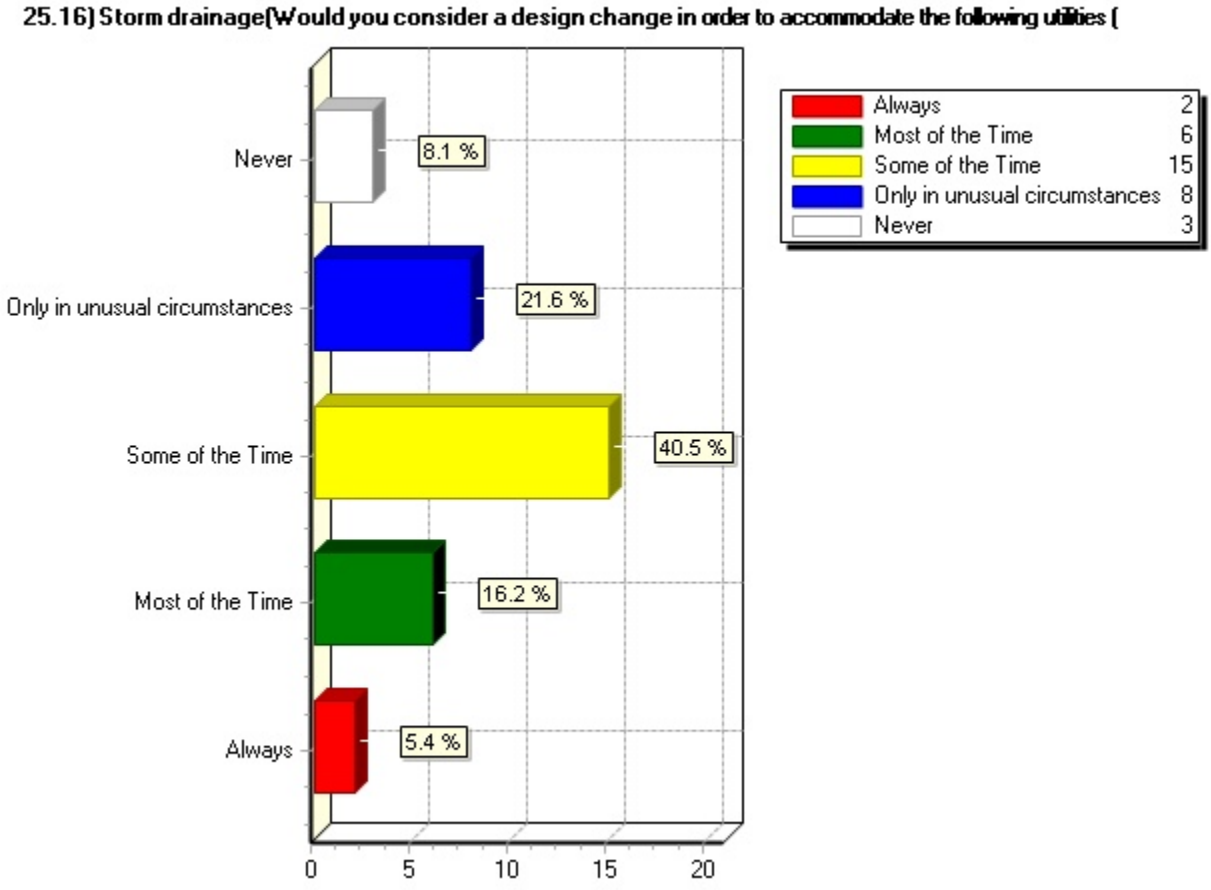
25.14) Gravity sanitary systems(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



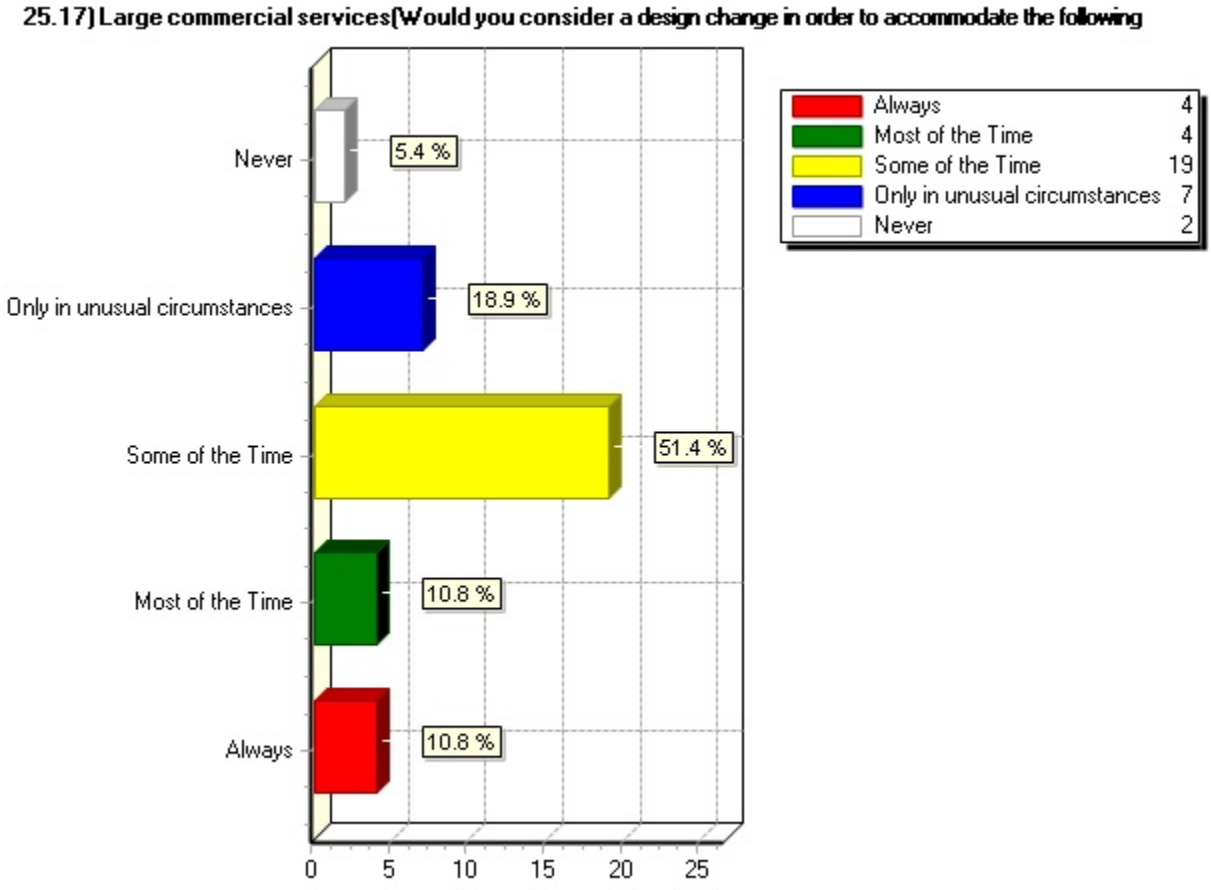
25.15) Pressure sanitary systems(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



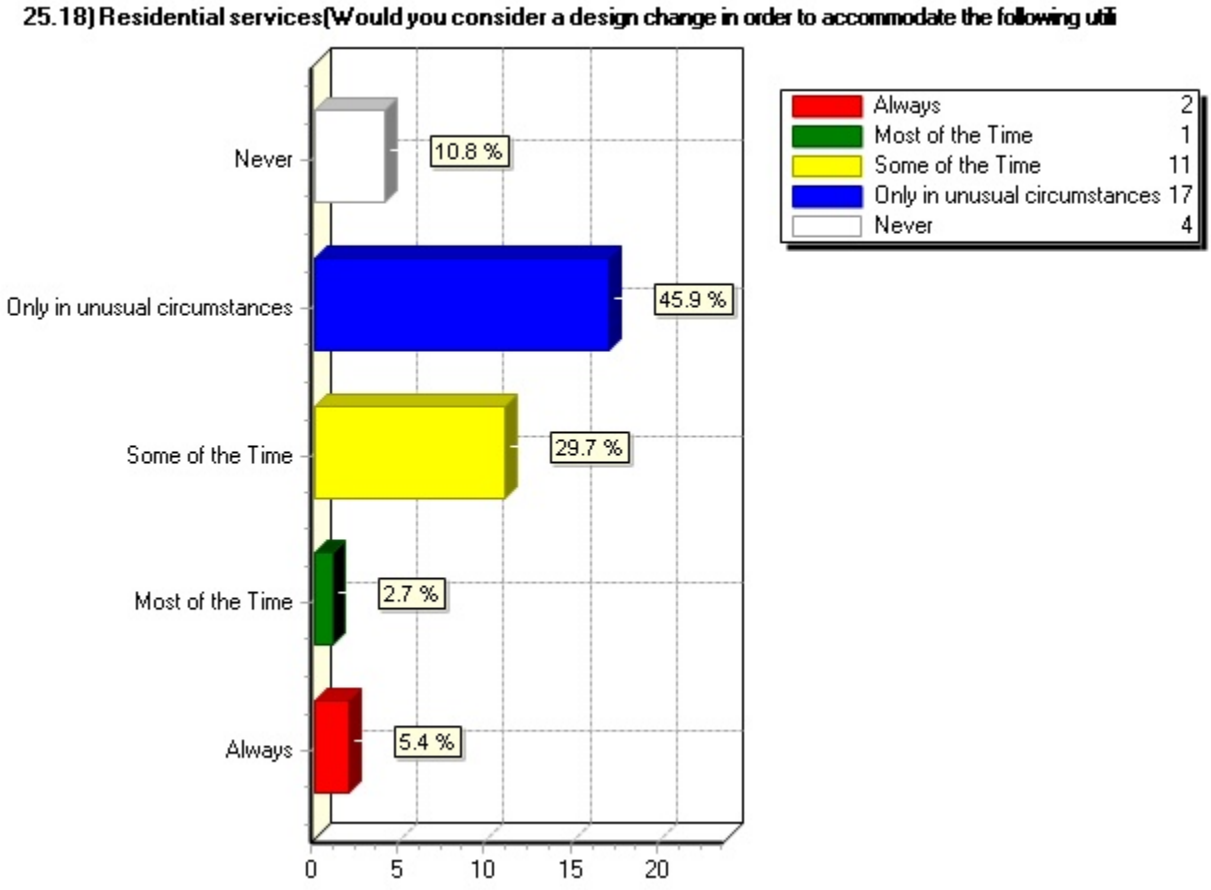
25.16) Storm drainage(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



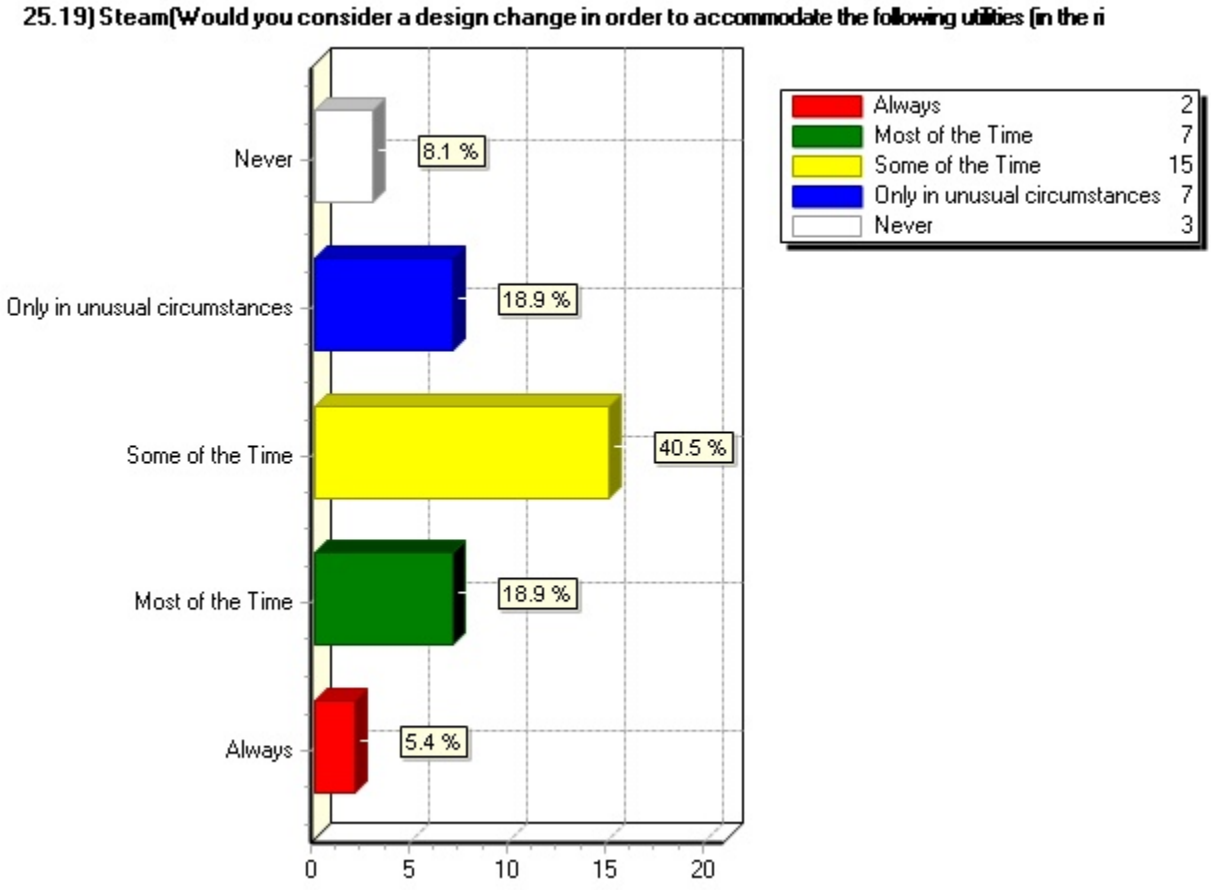
25.17) Large commercial services(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



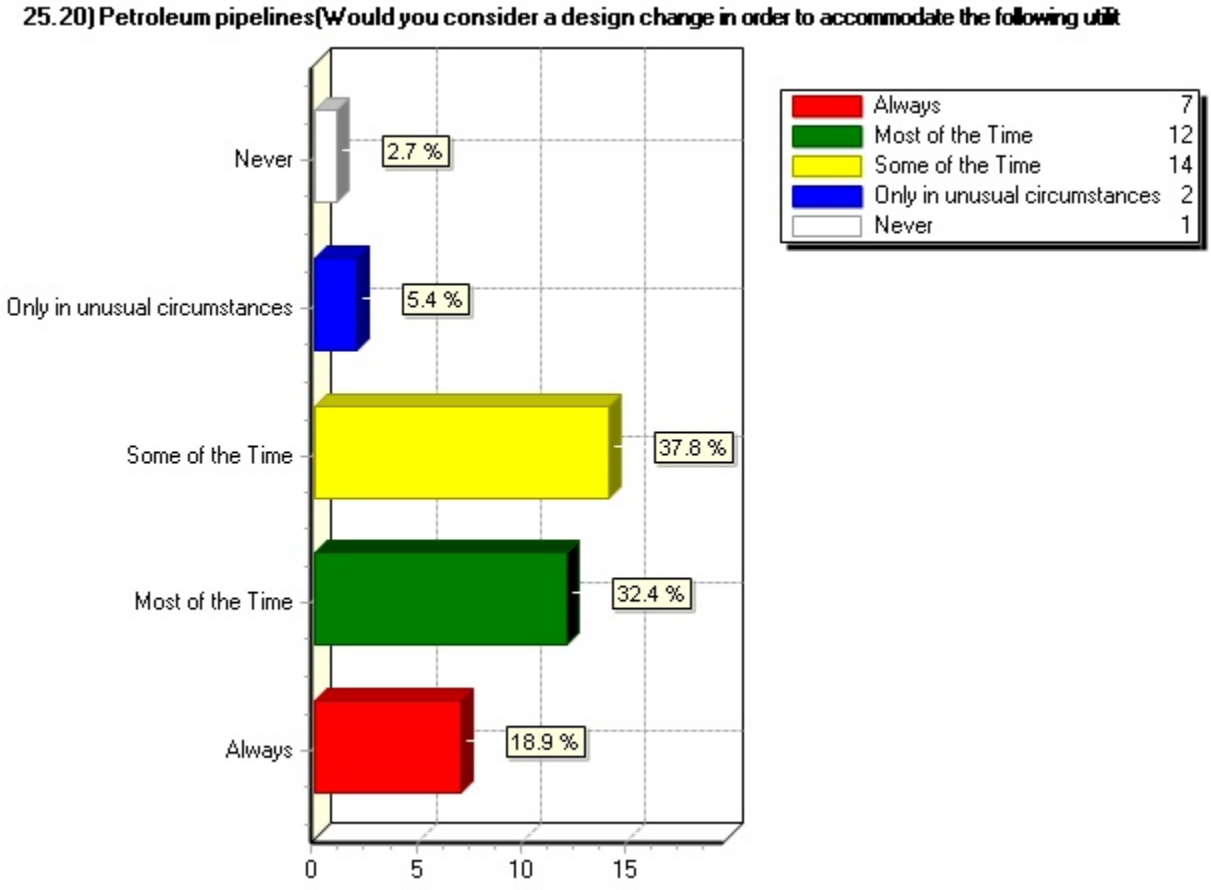
25.18) Residential services(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



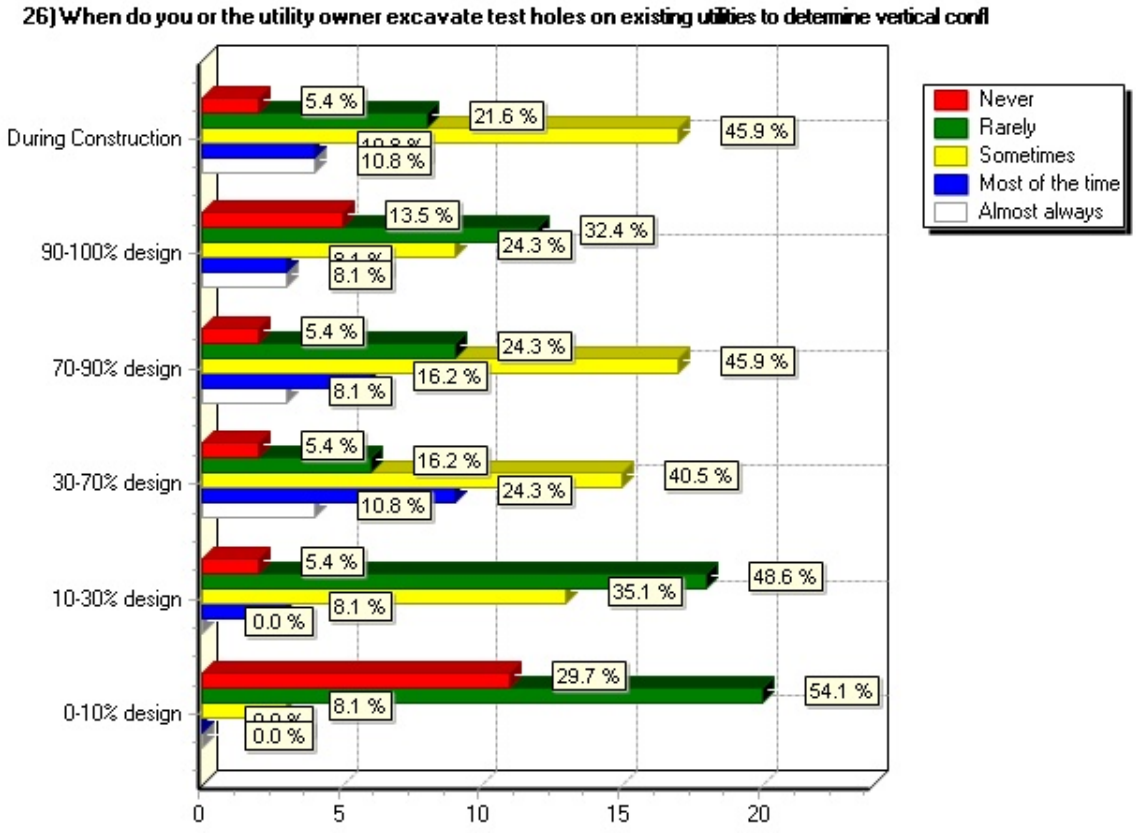
25.19) Steam(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



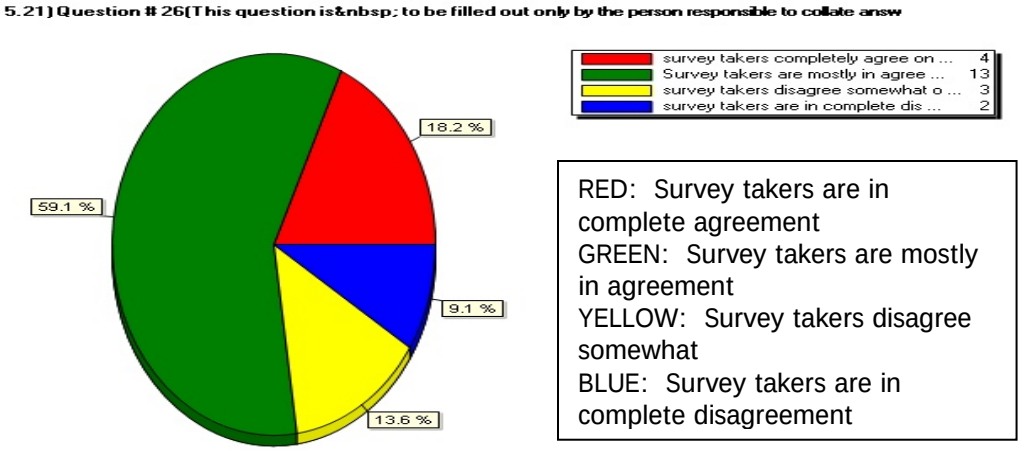
25.20) Petroleum pipelines(Would you consider a design change in order to accommodate the following utilities (in the right of way by permit) in conflict with the highway design?)



26) When do you or the utility owner excavate test holes on existing utilities to determine vertical conflicts? The official DOT response was:



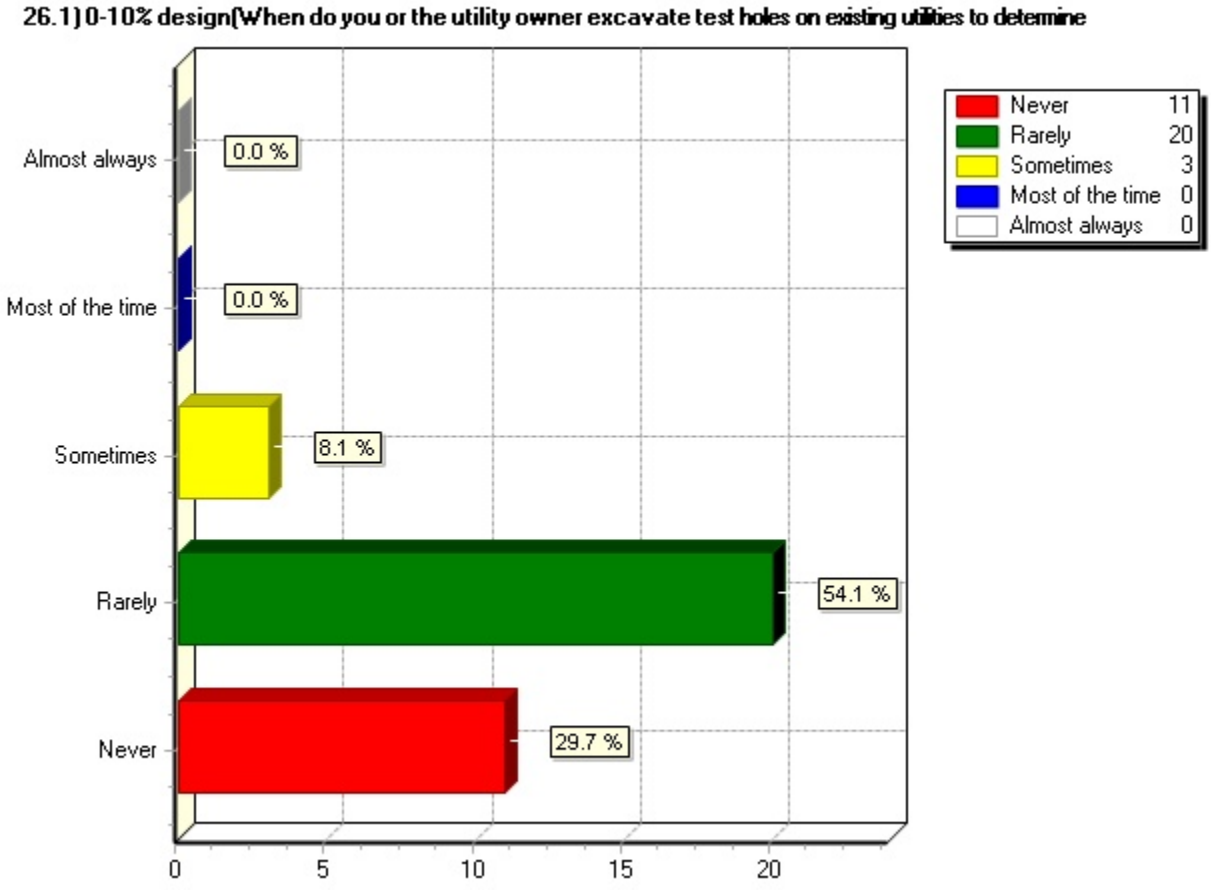
However, within the DOT there was the following diversity of opinion to the official response.



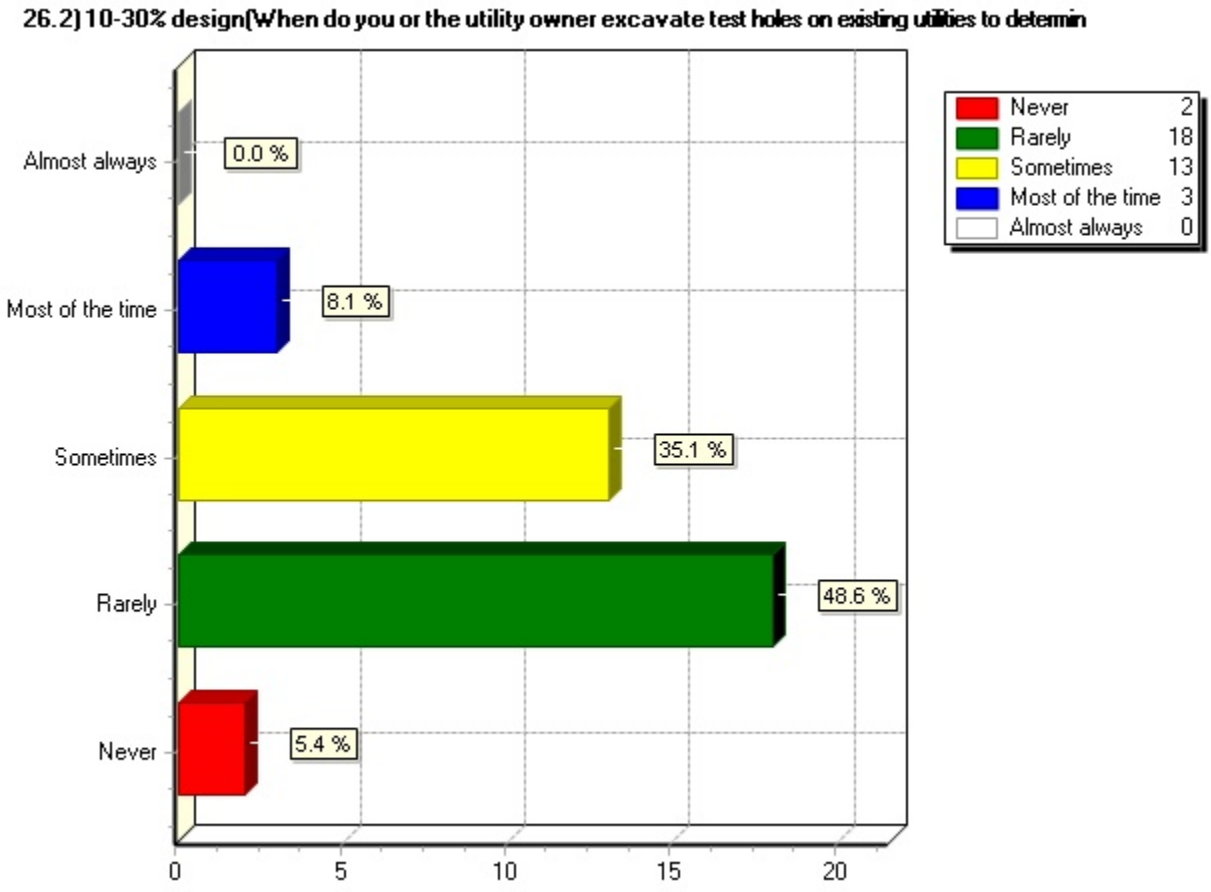
RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

Here is the detailed response for each question asked in # 26.

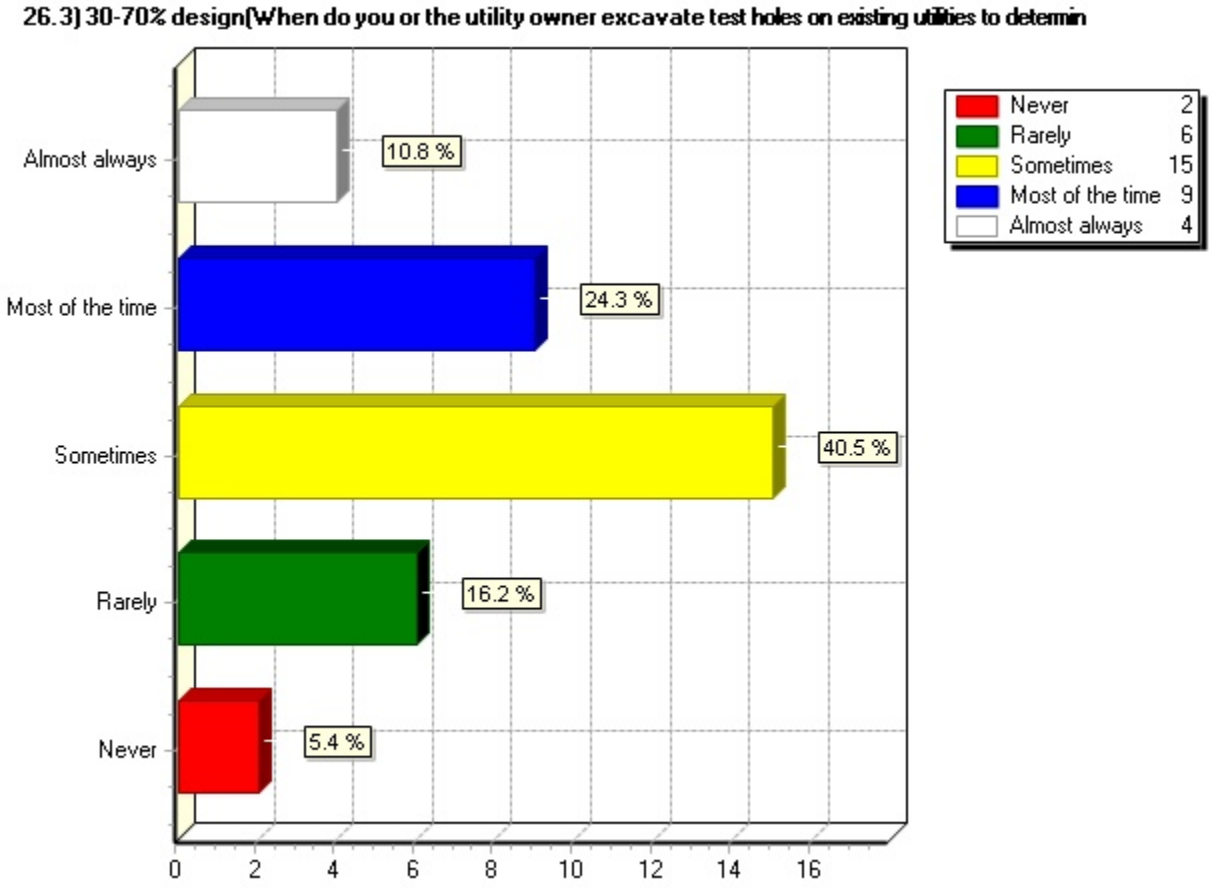
26.1) 0-10 % design (When do you or the utility owner excavate test holes on existing utilities to determine vertical conflicts?)



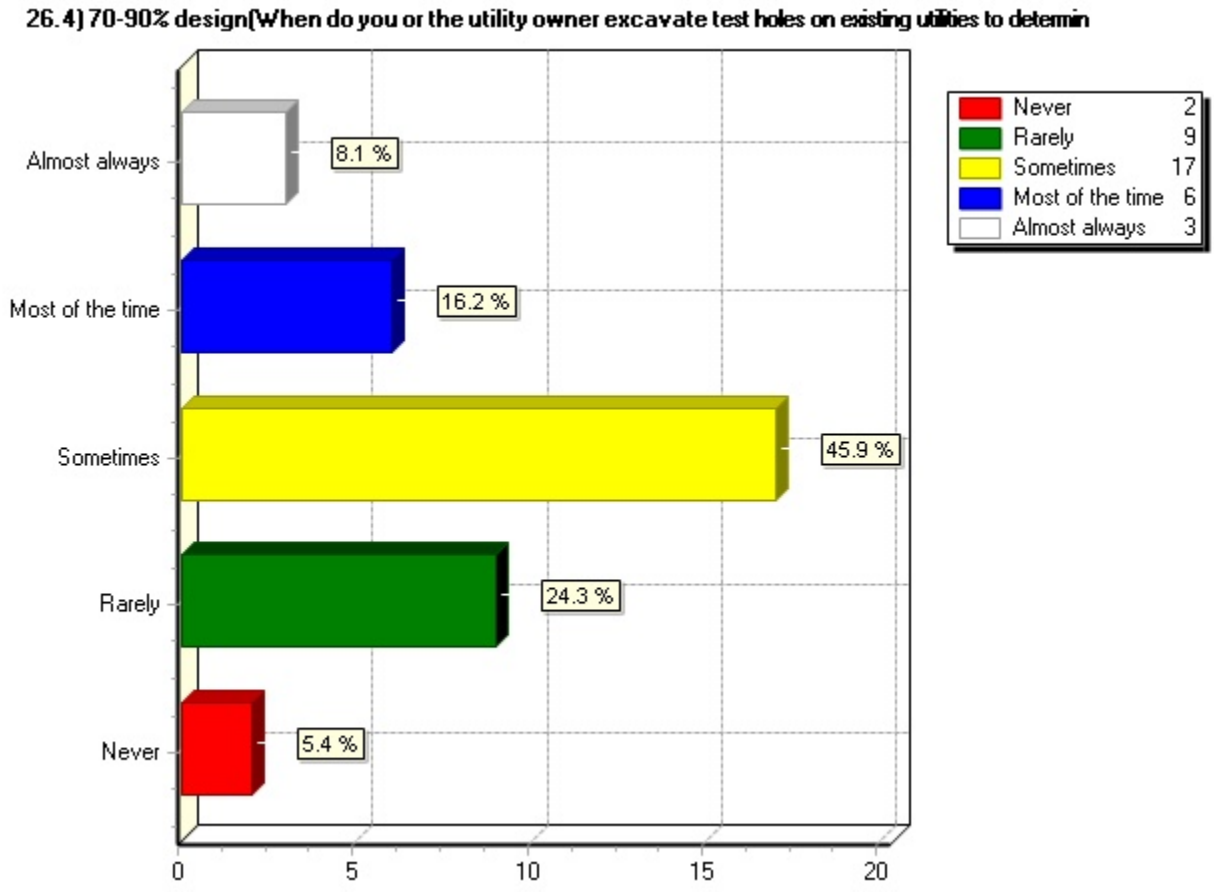
26.2) 10-30 % design(When do you or the utility owner excavate test holes on existing utilities to determine vertical conflicts?)



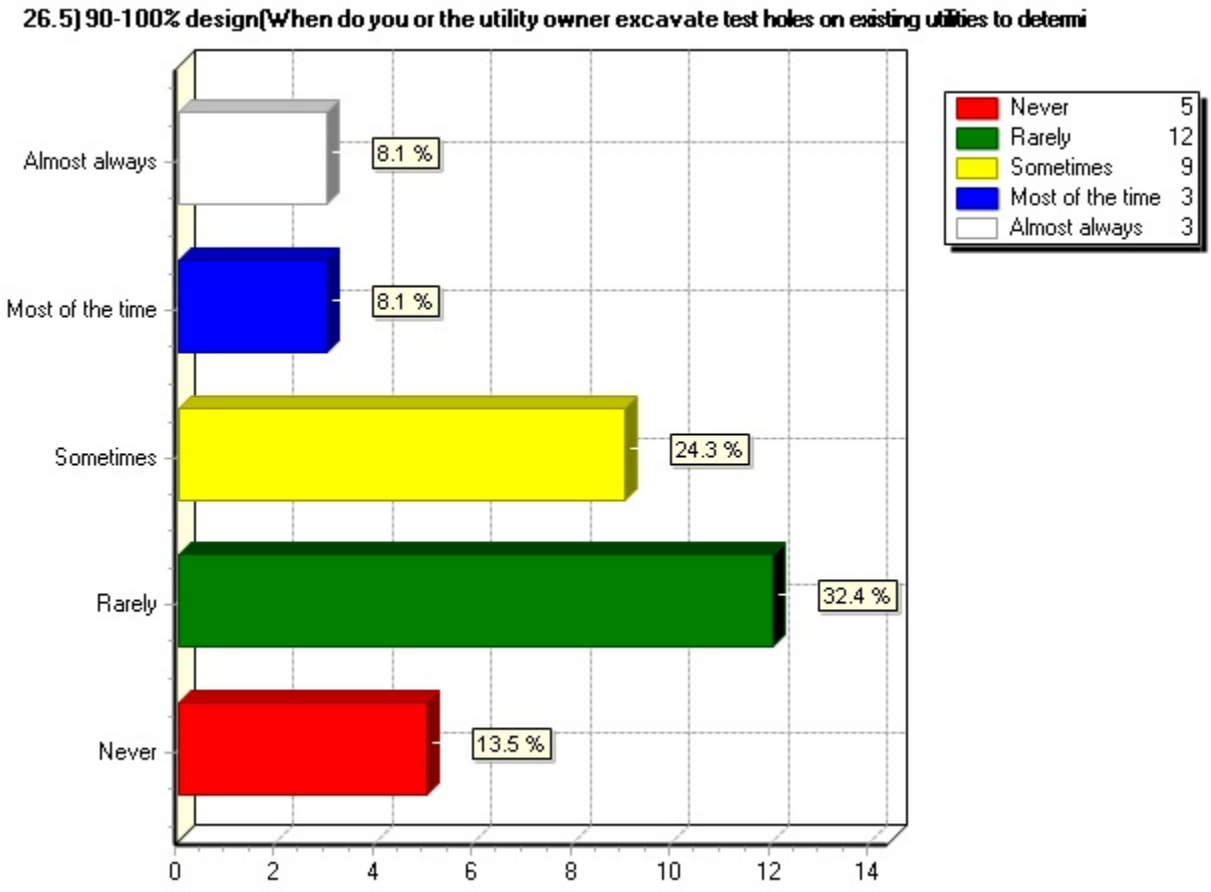
26.3) 30-70% design(When do you or the utility owner excavate test holes on existing utilities to determine vertical conflicts?)



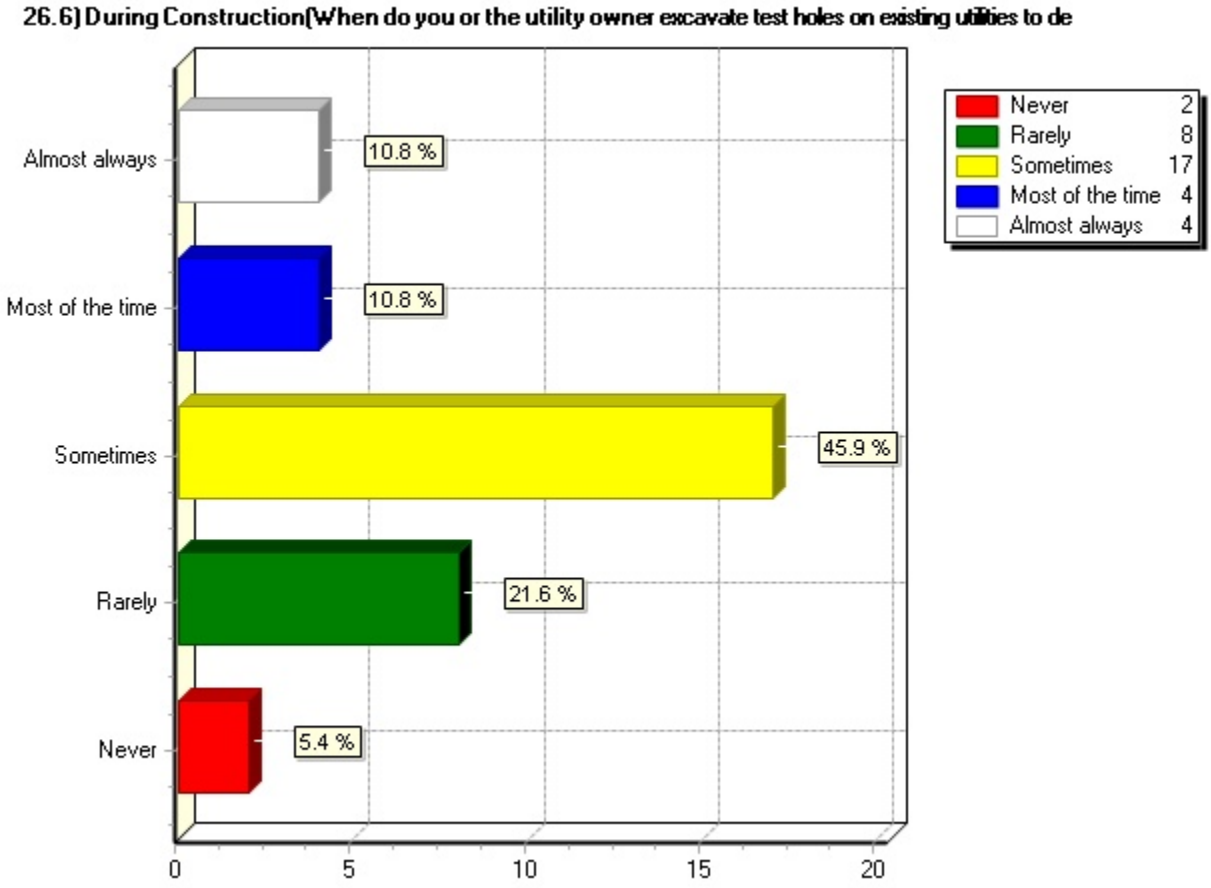
26.4) 70-90% design(When do you or the utility owner excavate test holes on existing utilities to determine vertical conflicts?)



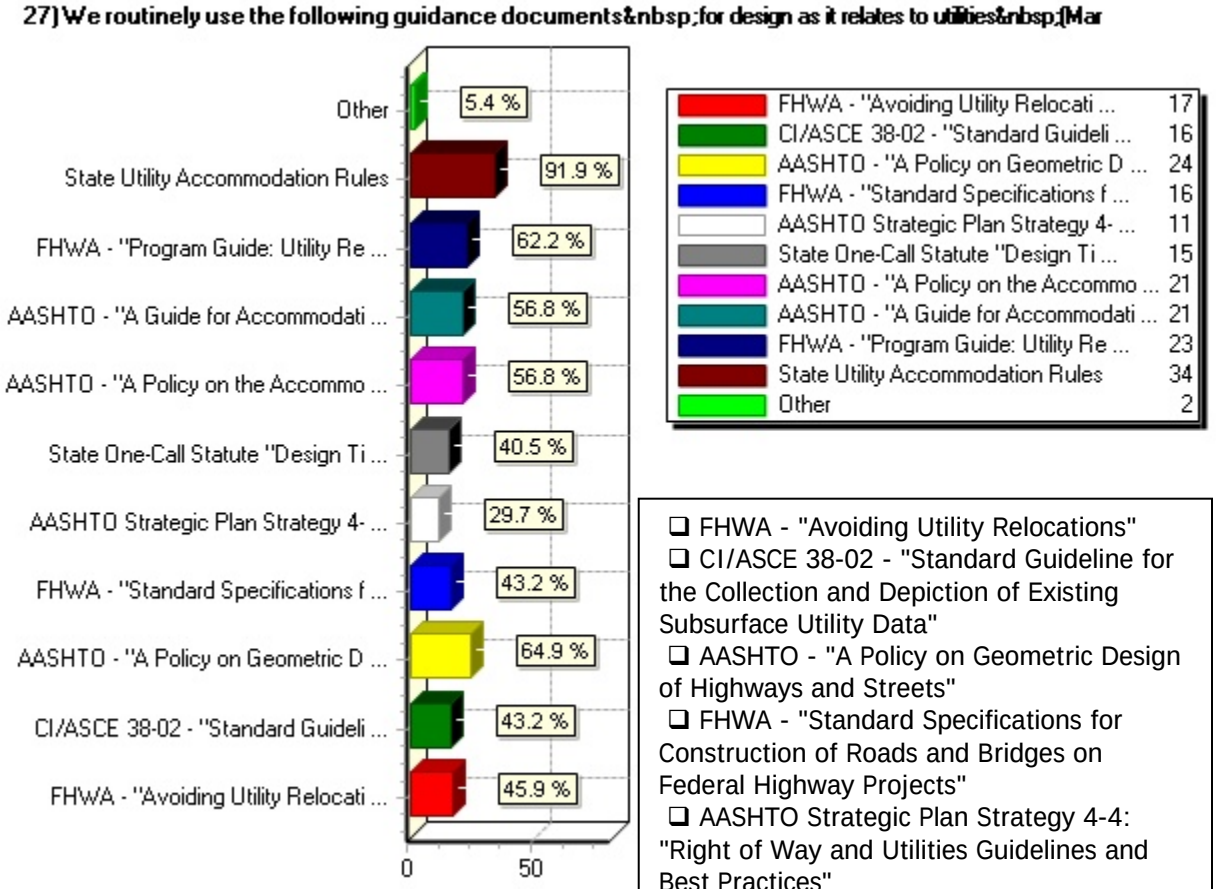
26.5) 90-100% design(When do you or the utility owner excavate test holes on existing utilities to determine vertical conflicts?)



26.6) During Construction(When do you or the utility owner excavate test holes on existing utilities to determine vertical conflicts?)



27) We routinely use the following guidance documents for design as it relates to utilities (Mark all answers that apply.) The official DOT response was:

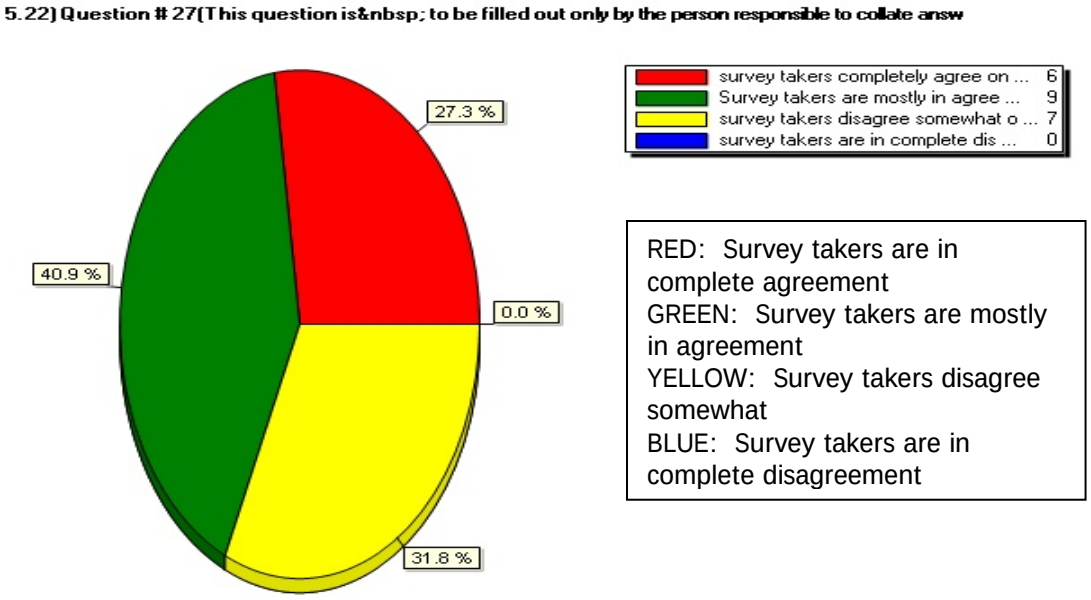


Other Responses:

One Call and State utility accom rules used by most.
Define routinely.
WisDOT Guide to Utility Coordination
lots of different responses
Other DOT Design Manuals

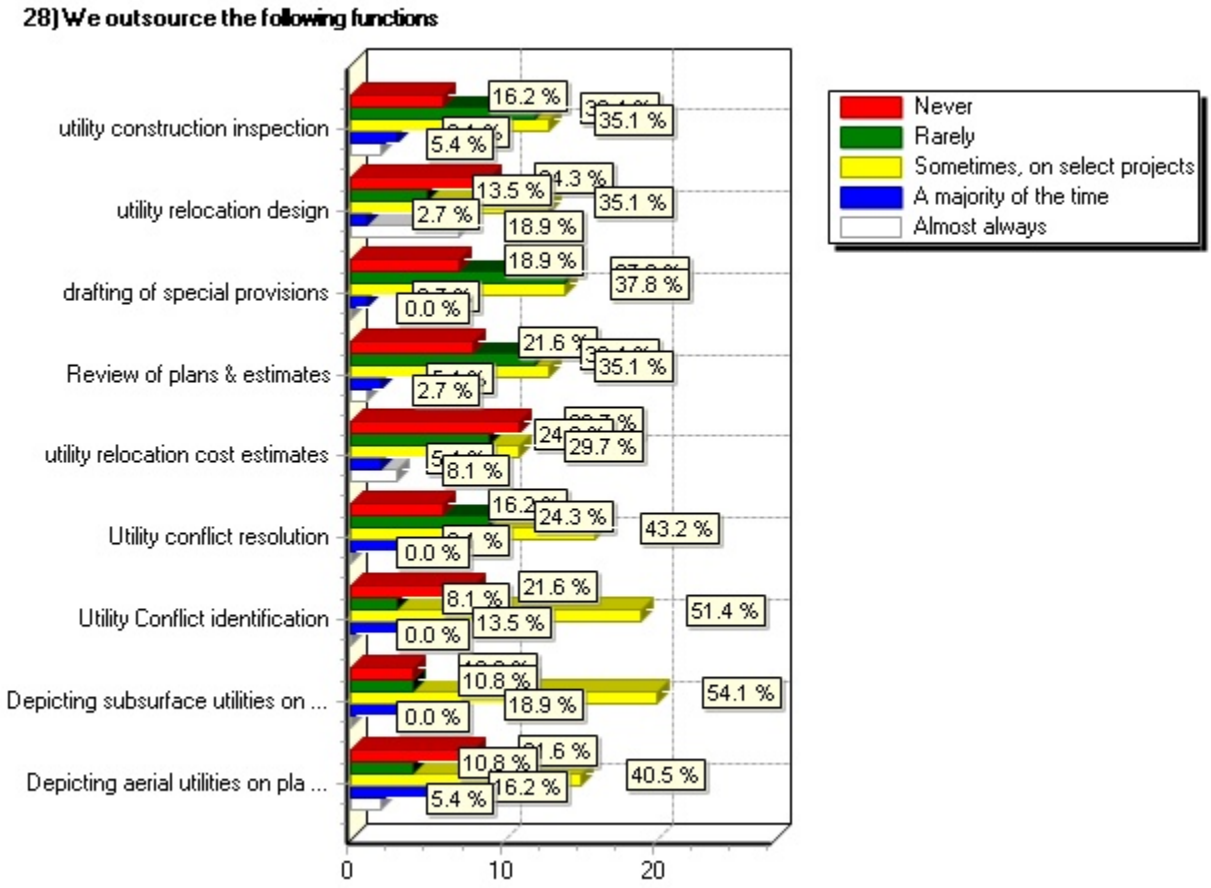
- ❑ FHWA - "Avoiding Utility Relocations"
- ❑ CI/ASCE 38-02 - "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data"
- ❑ AASHTO - "A Policy on Geometric Design of Highways and Streets"
- ❑ FHWA - "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects"
- ❑ AASHTO Strategic Plan Strategy 4-4: "Right of Way and Utilities Guidelines and Best Practices"
- ❑ State One-Call Statute "Design Ticket"
- ❑ AASHTO - "A Policy on the Accommodation of Utilities Within Freeway Right-of-Way"
- ❑ AASHTO - "A Guide for Accommodating Utilities Within Highway Right-of-Way"
- ❑ FHWA - "Program Guide: Utility Relocation and Accommodation on Federal-Aid Highway Projects"
- ❑ State Utility Accommodation Rules
- ❑ Other (please specify)

However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

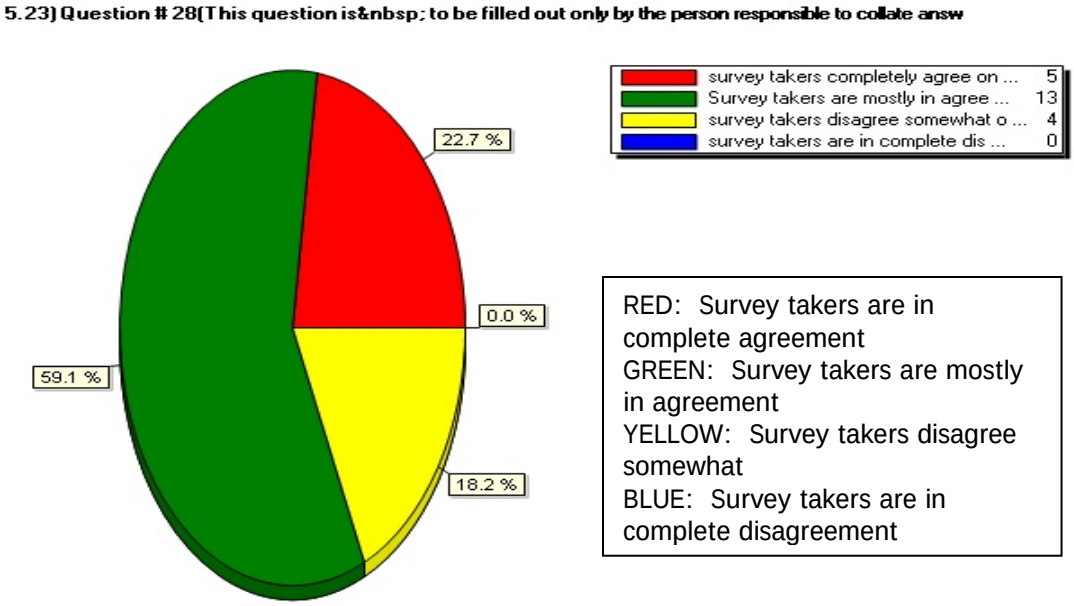
28) We outsource the following functions. The official DOT response was:



Comment Responses:

Utilities provide all design and cost estimates. Specs if work performed by state contractor.
Actual utility relocation design is the responsibility of the utility owner.
relocation design & construction inspection performed by utility owners
Cost estimates and design done by utilities
It depends on whether the project is designed in-house or by consultant
we hire consultants to do the same as KDOT
ADOT typically negotiates all expensive & interesting utility conflicts.

However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
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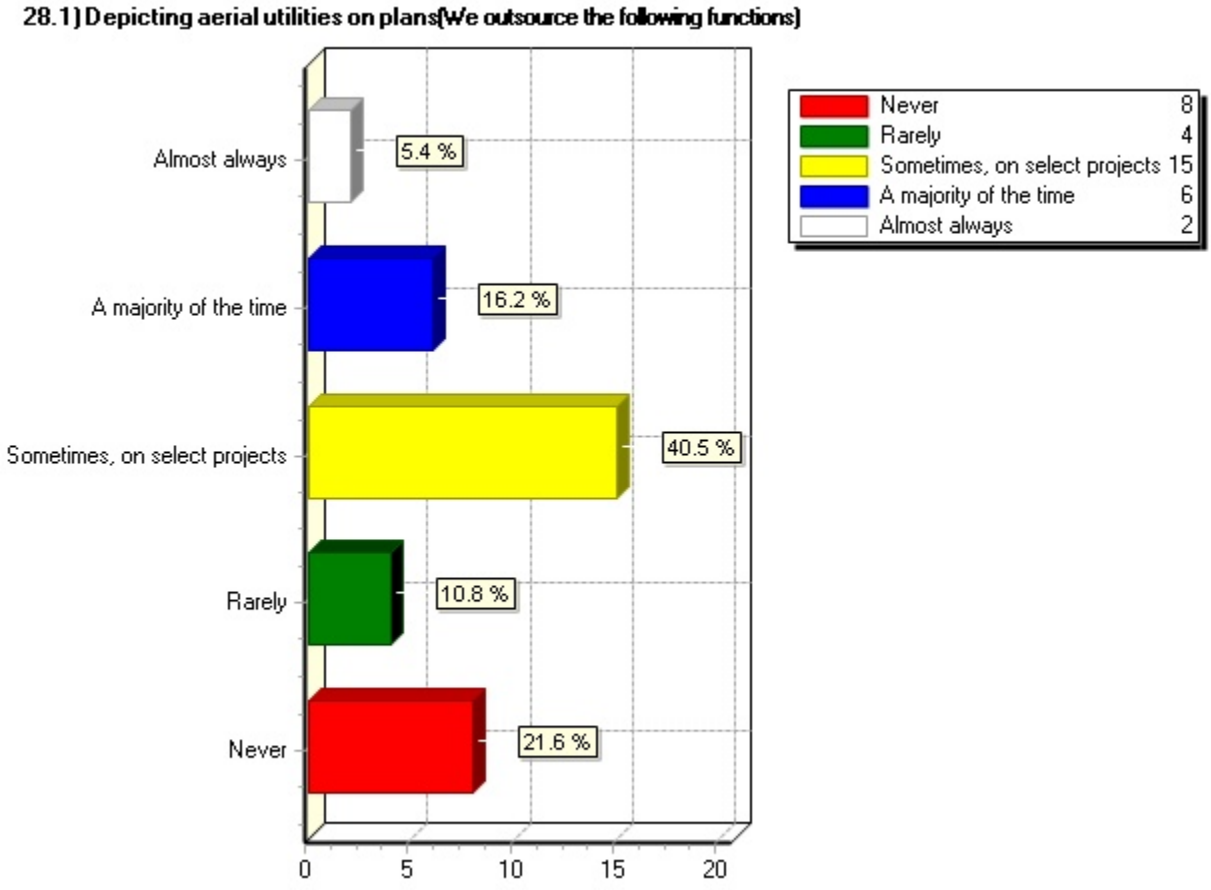
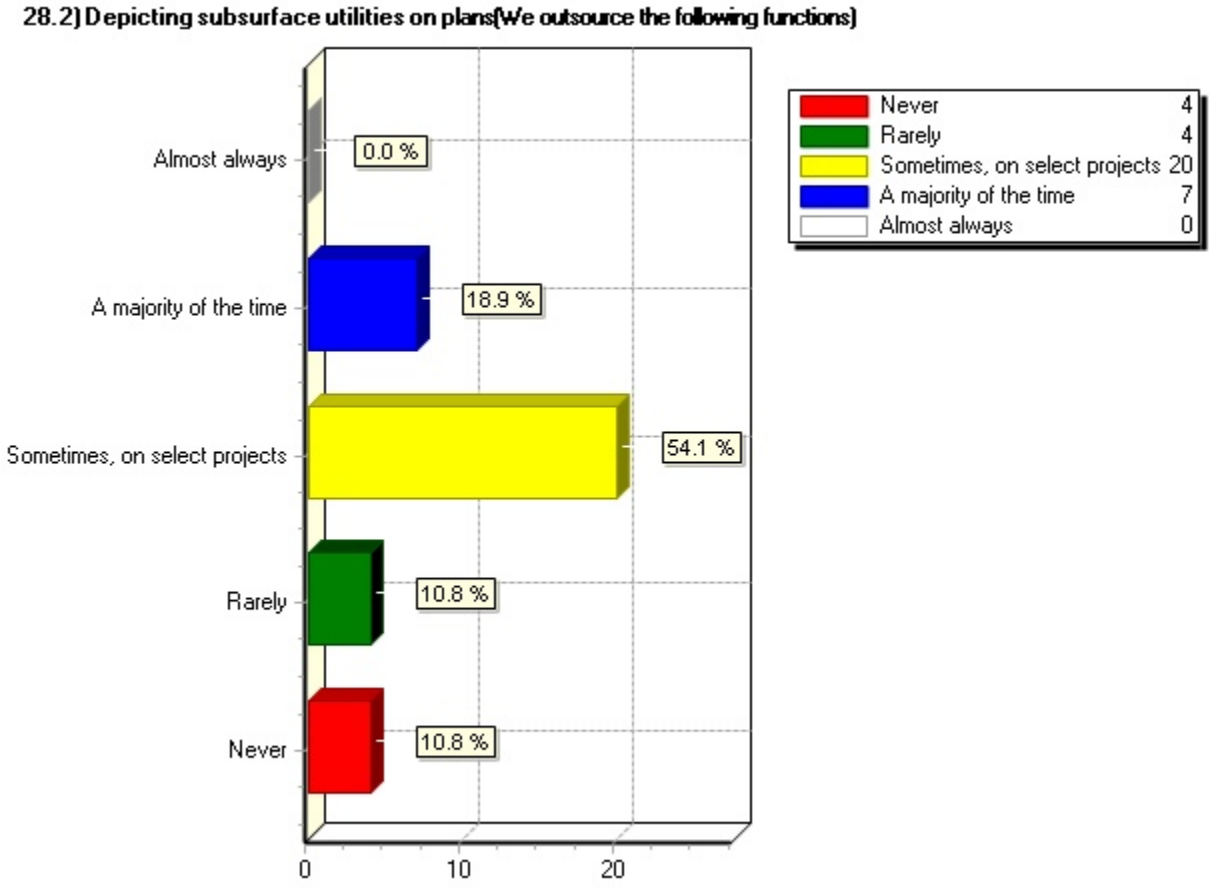
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

Here is the detailed response for each question asked in # 28.

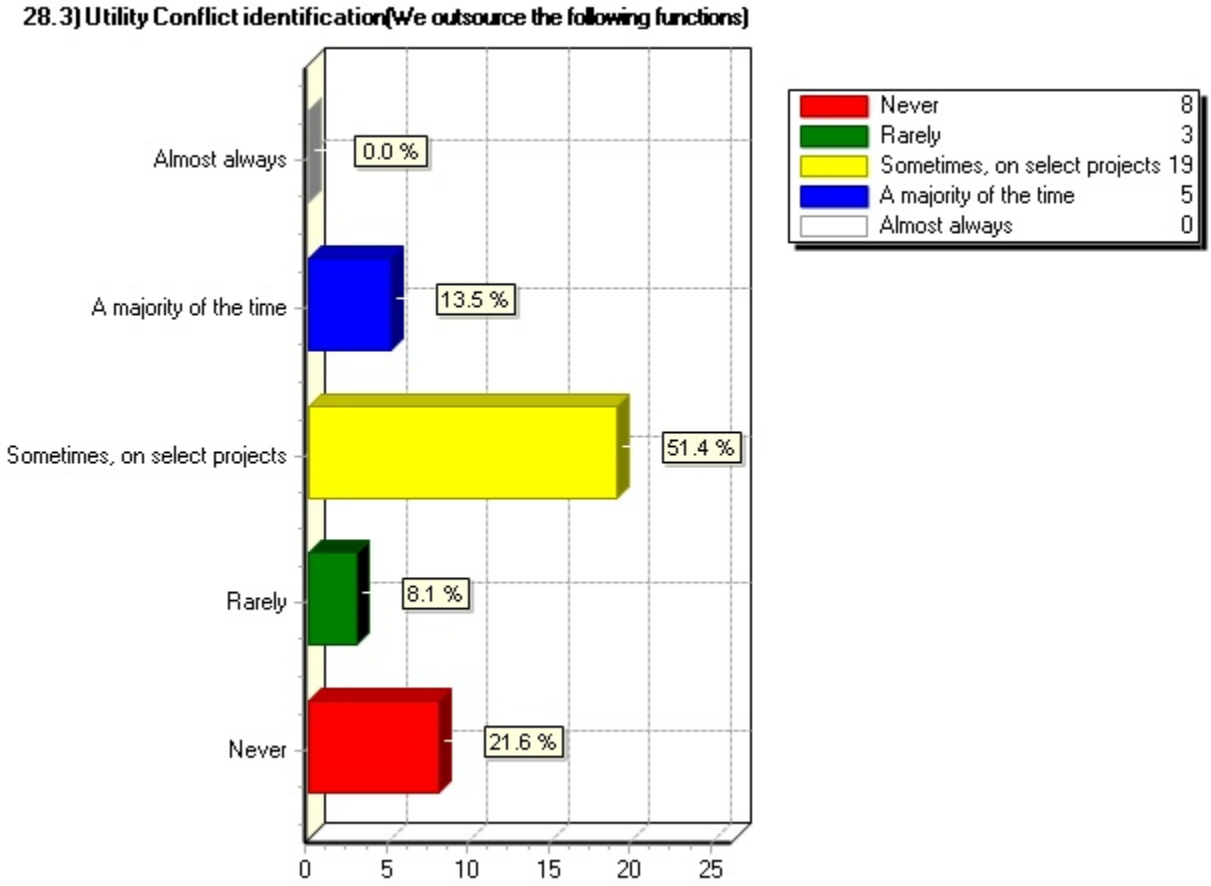
28.1) Depicting aerial utilities on plans(We outsource the following functions)



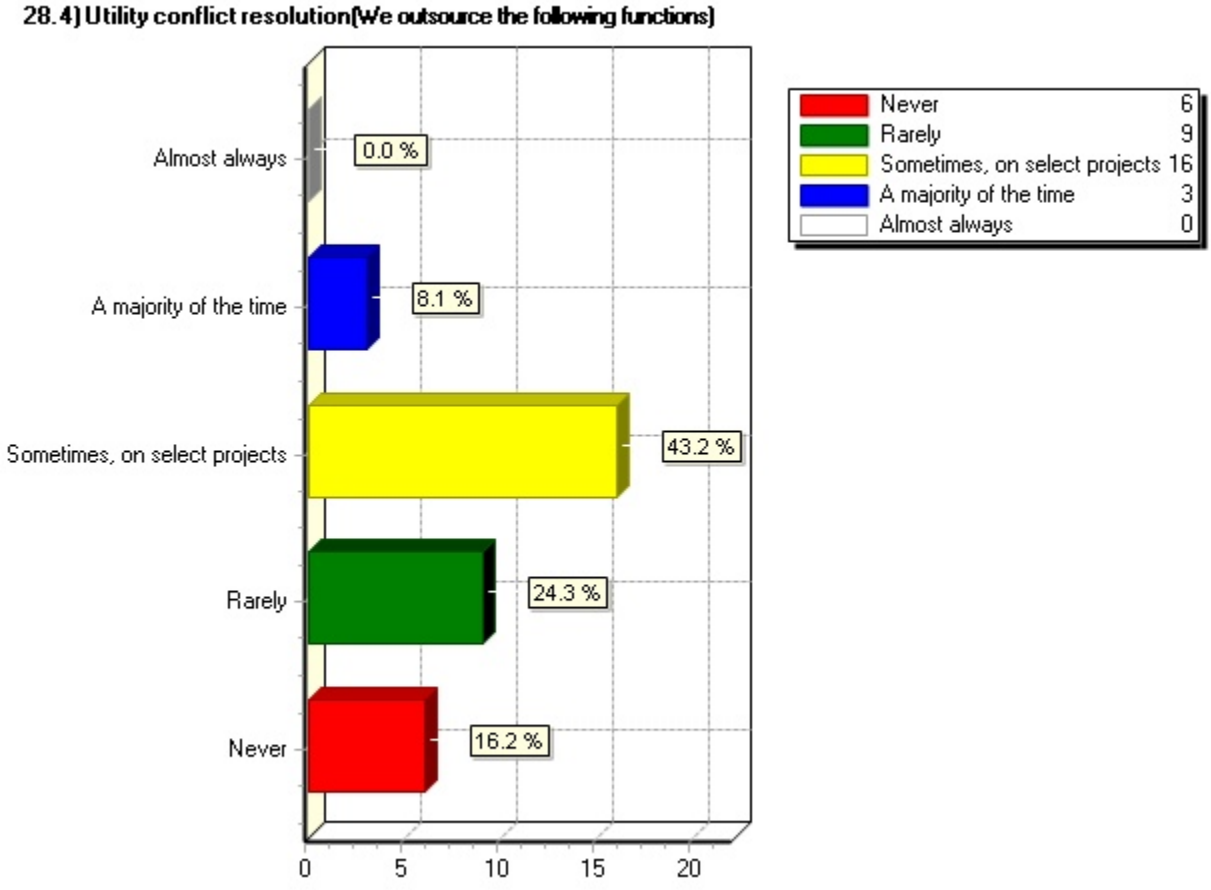
28.2) Depicting subsurface utilities on plans(We outsource the following functions)



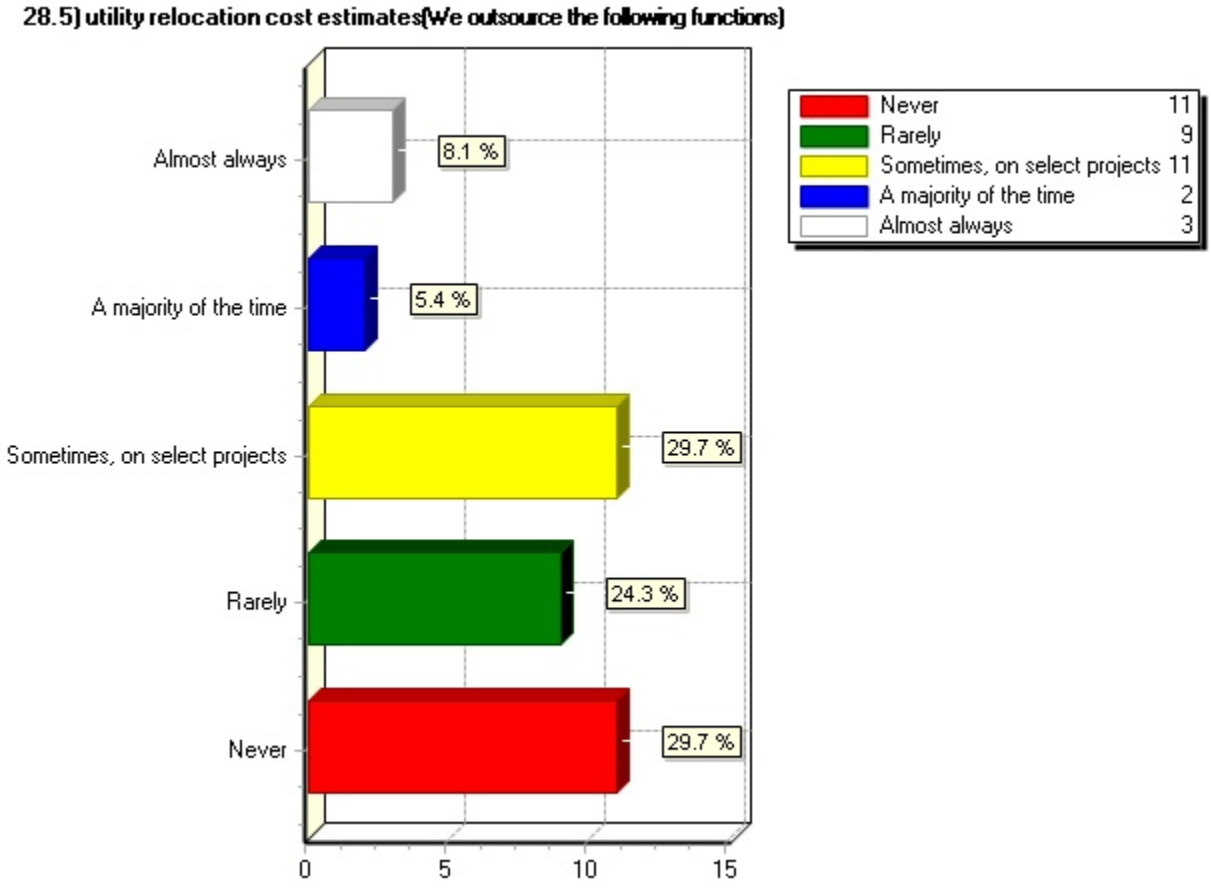
28.3) Utility Conflict identification(We outsource the following functions)



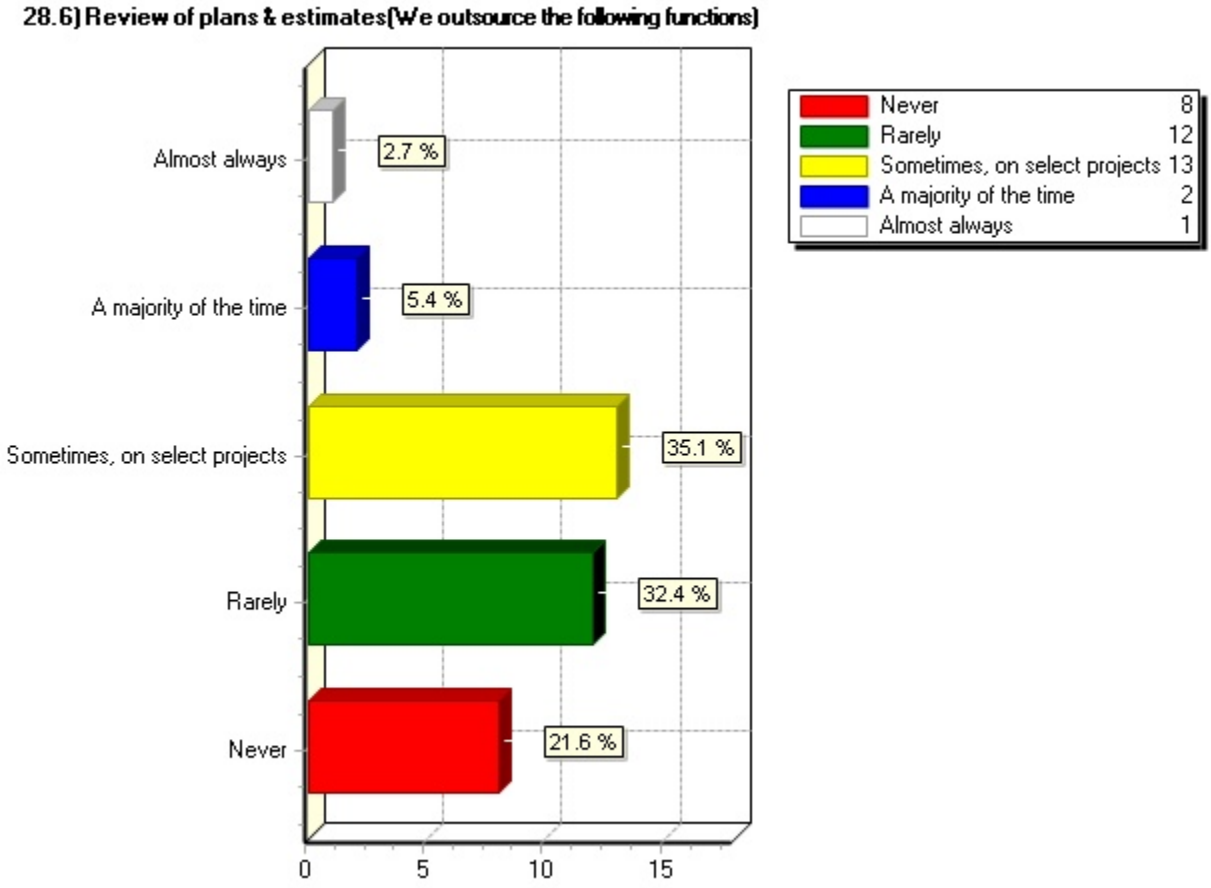
28.4) Utility conflict resolution(We outsource the following functions)



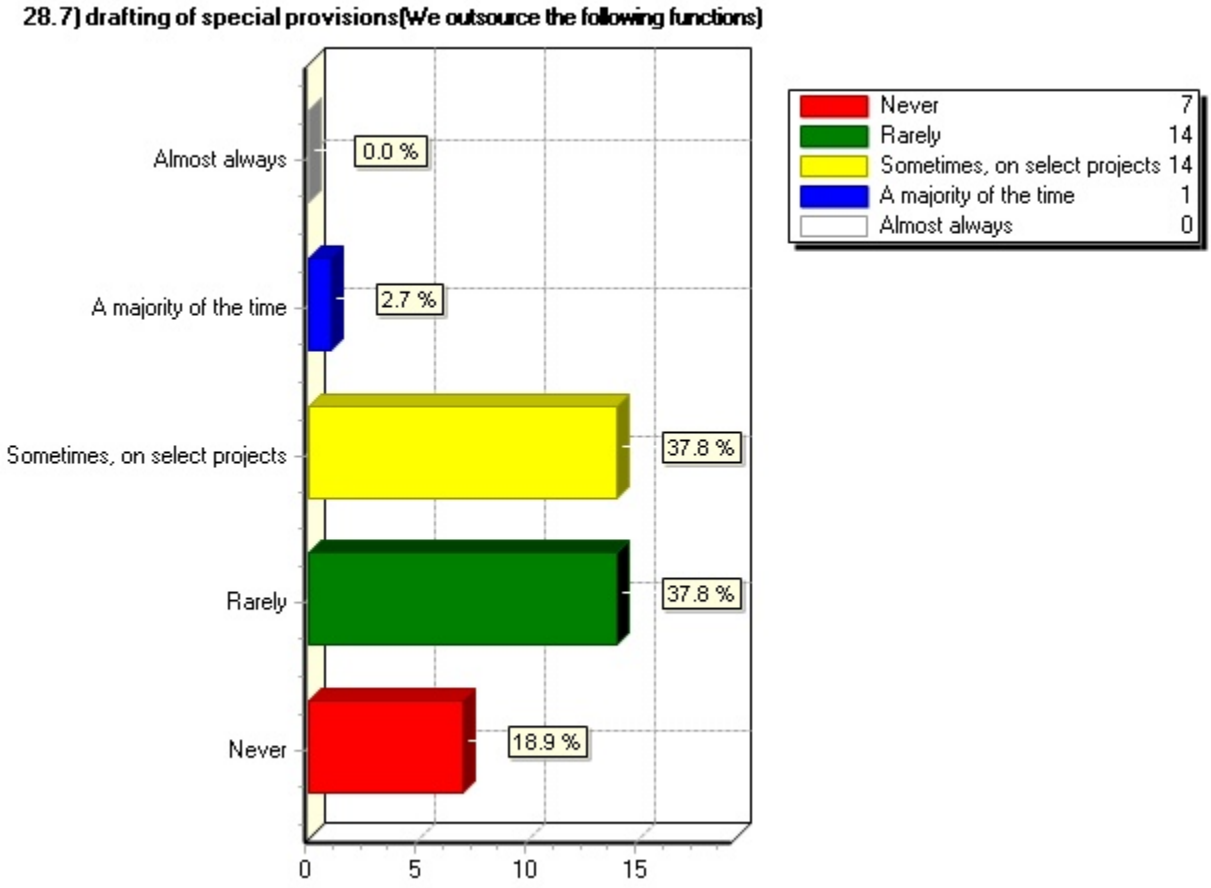
28.5) utility relocation cost estimates(We outsource the following functions)



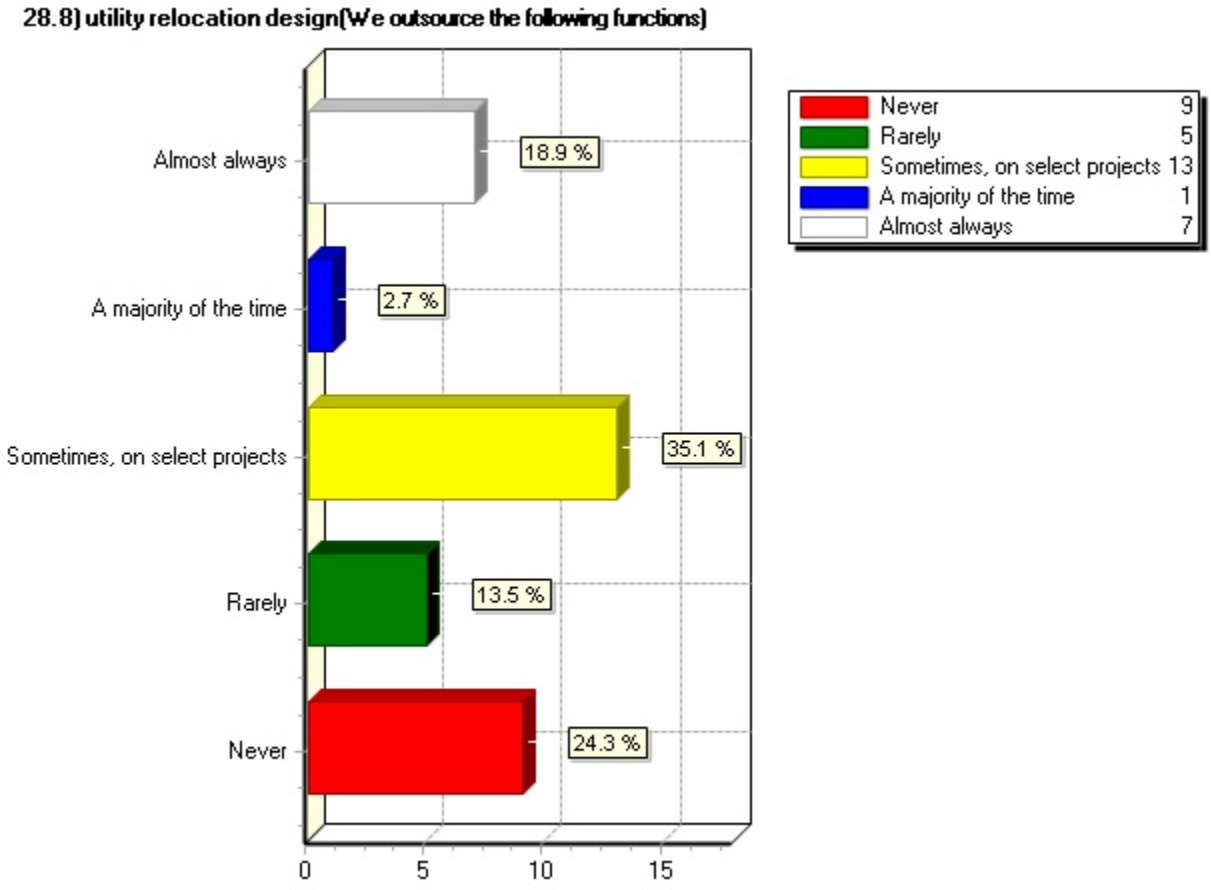
28.6) Review of plans & estimates(We outsource the following functions)



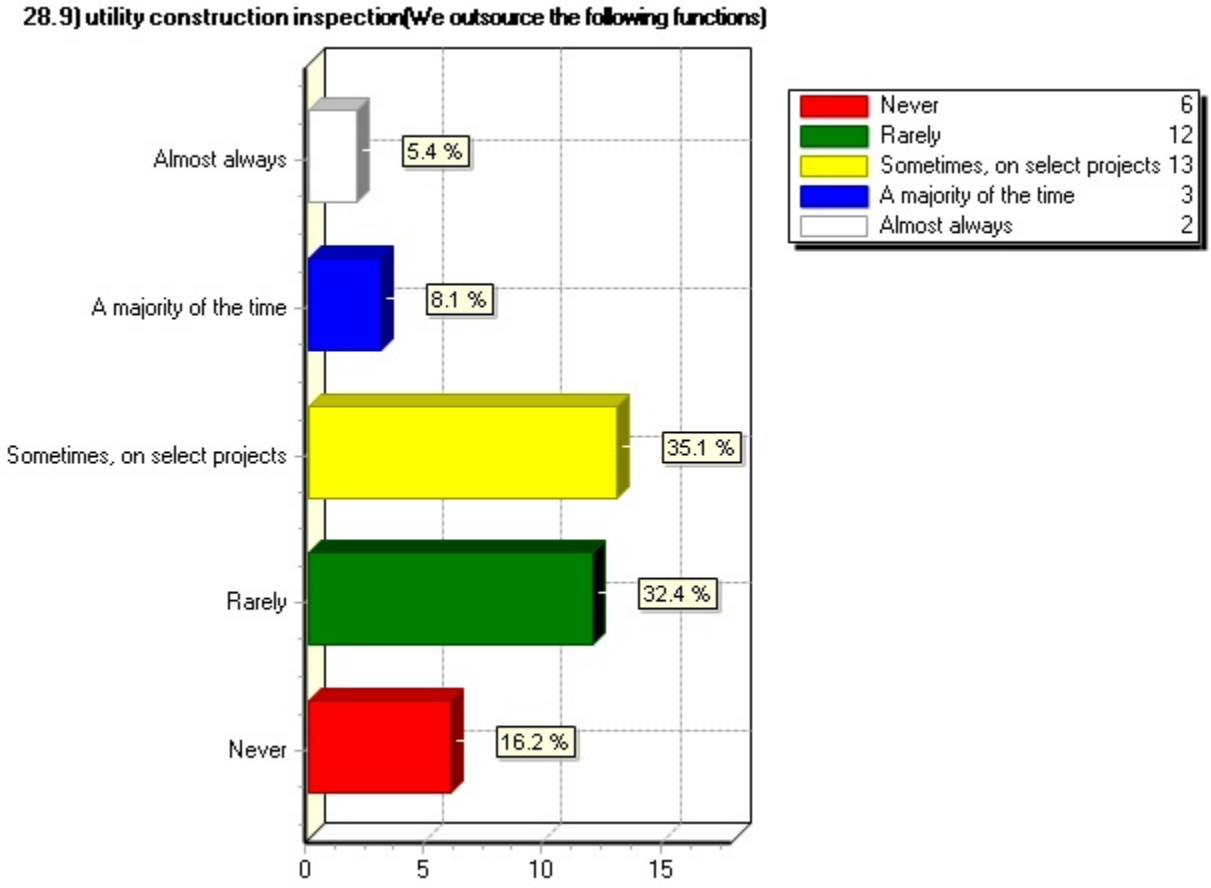
28.7) drafting of special provisions(We outsource the following functions)



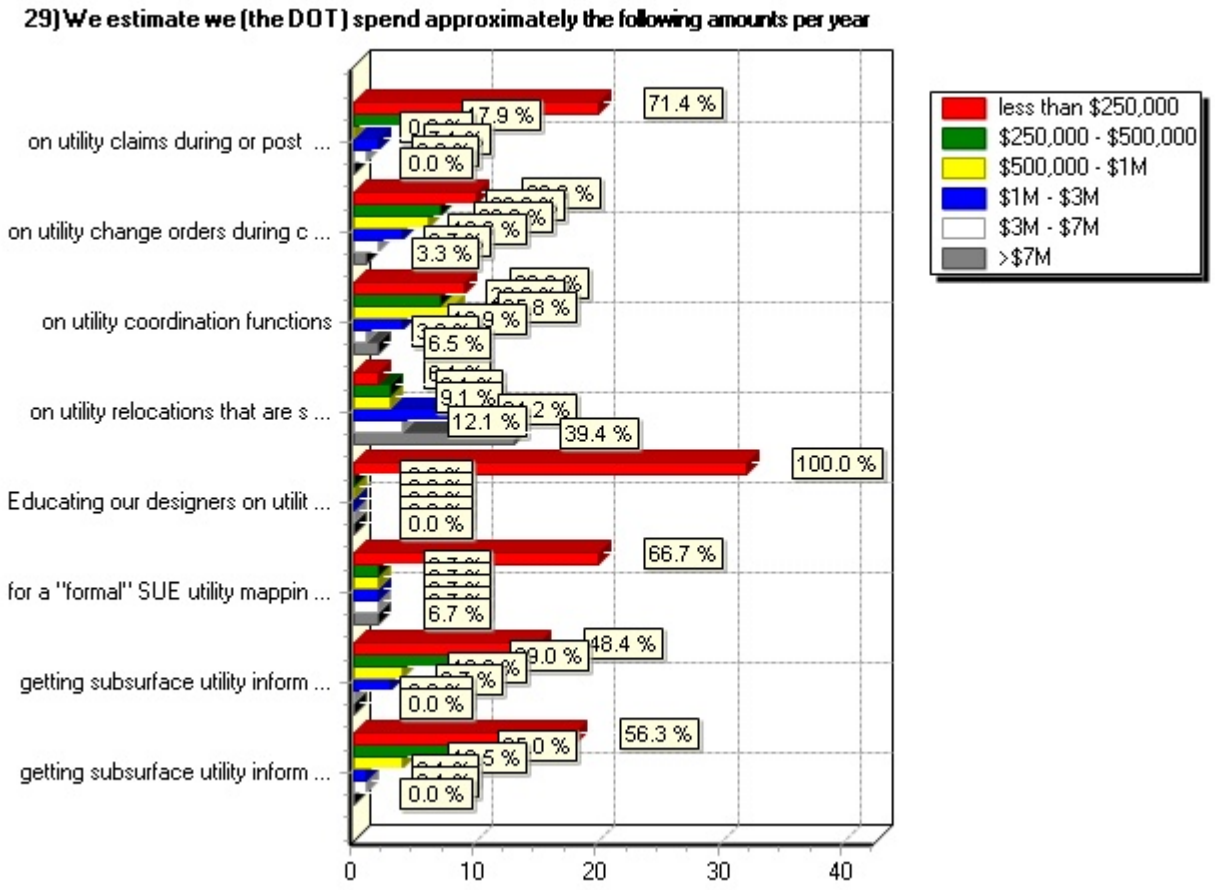
28.8) utility relocation design(We outsource the following functions)



28.9) utility construction inspection(We outsource the following functions)

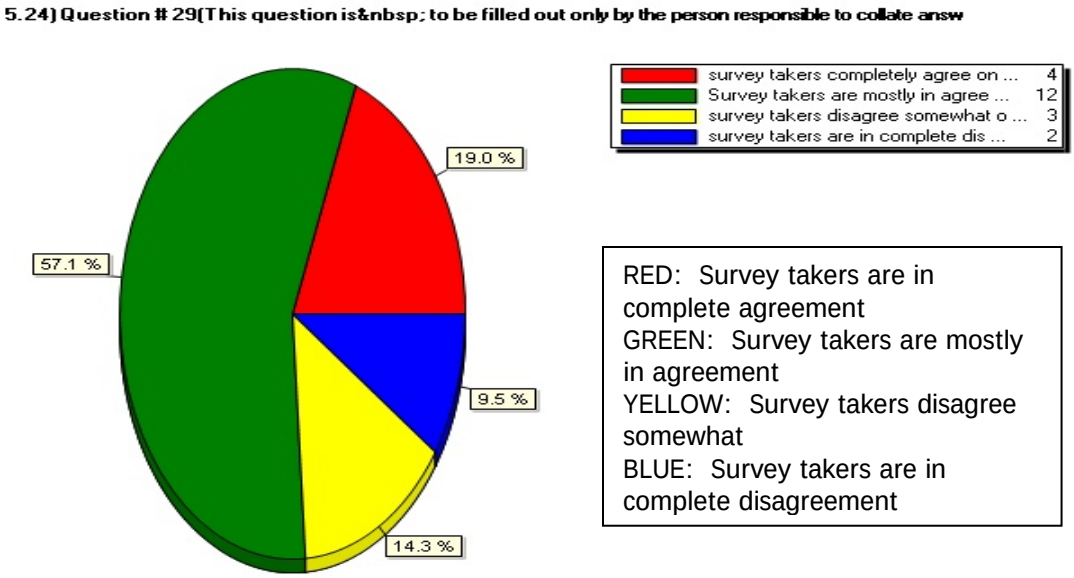


29) We estimate we (the DOT) spend approximately the following amounts per year. The official DOT response was:



getting subsurface utility information depicted on design plans in-house
getting subsurface utility information depicted on design plans by consultant designers
for a "formal" SUE utility mapping program
Educating our designers on utility issues
on utility relocations that are state cost responsibility
on utility coordination functions
on utility change orders during construction
on utility claims during or post construction

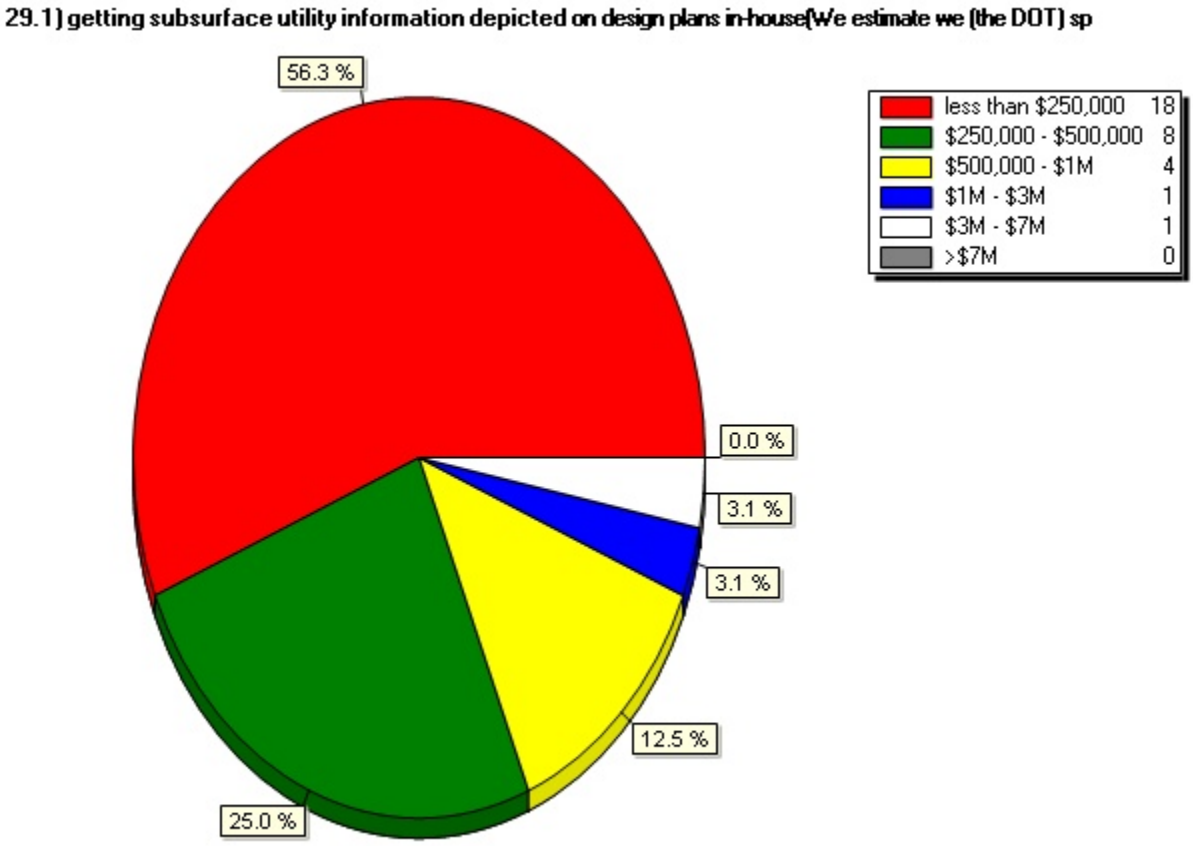
However, within the DOT there was the following diversity of opinion to the official response.



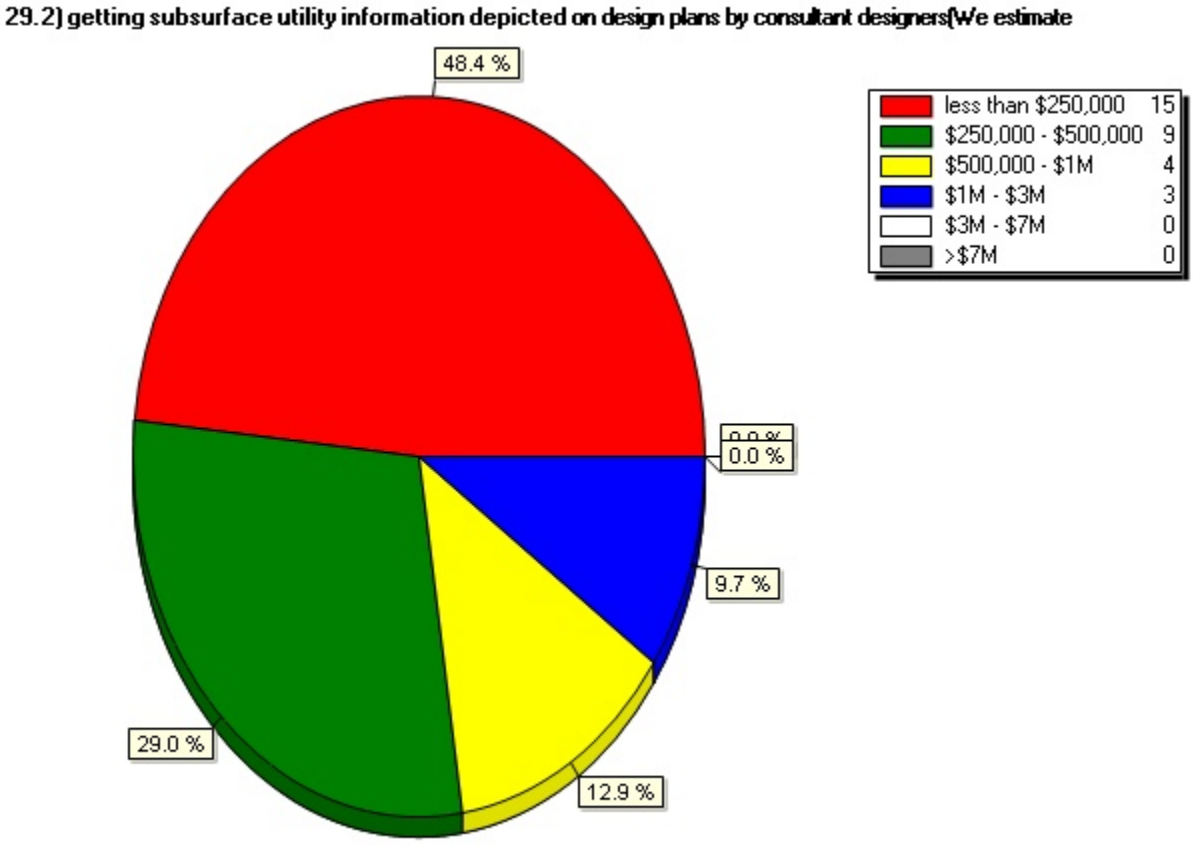
RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

Here is the detailed response for each question asked in # 29.

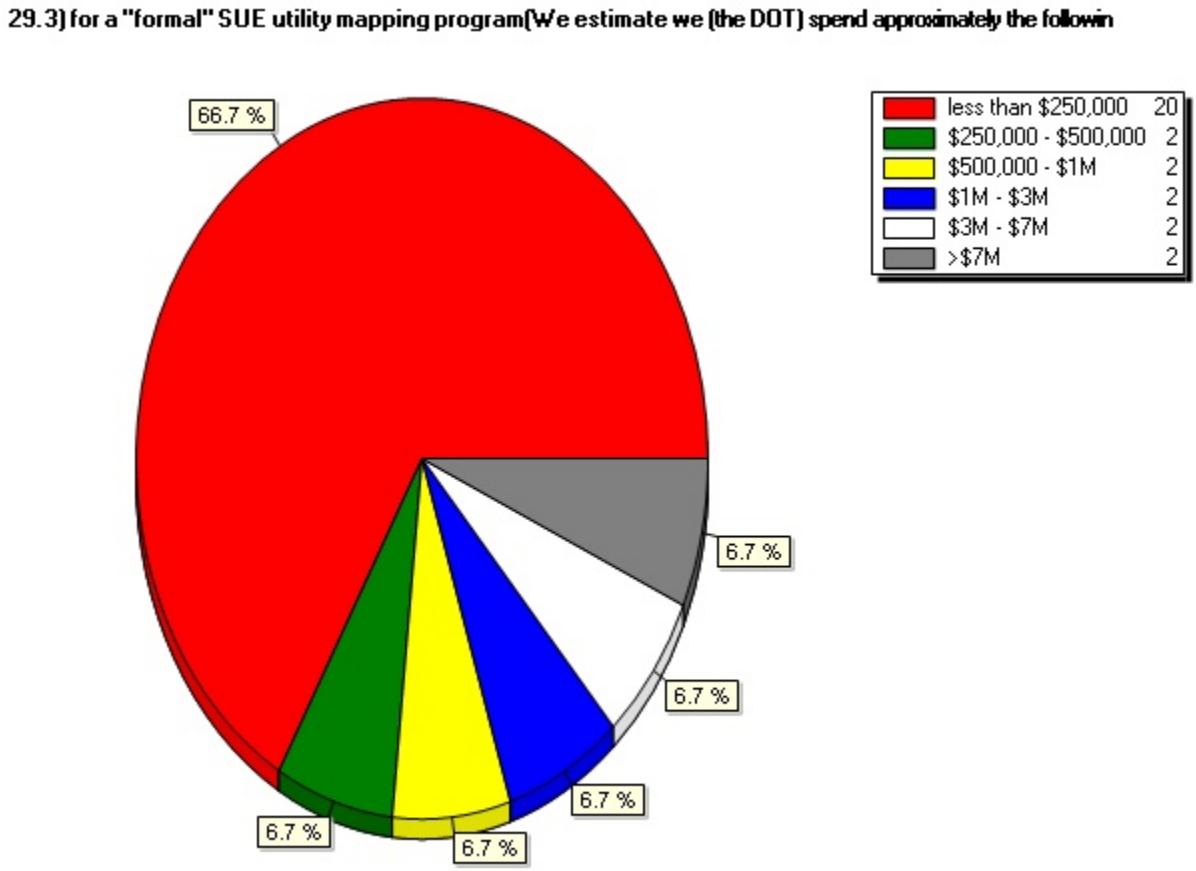
29.1) getting subsurface utility information depicted on design plans in-house(We estimate we (the DOT) spend approximately the following amounts per year)



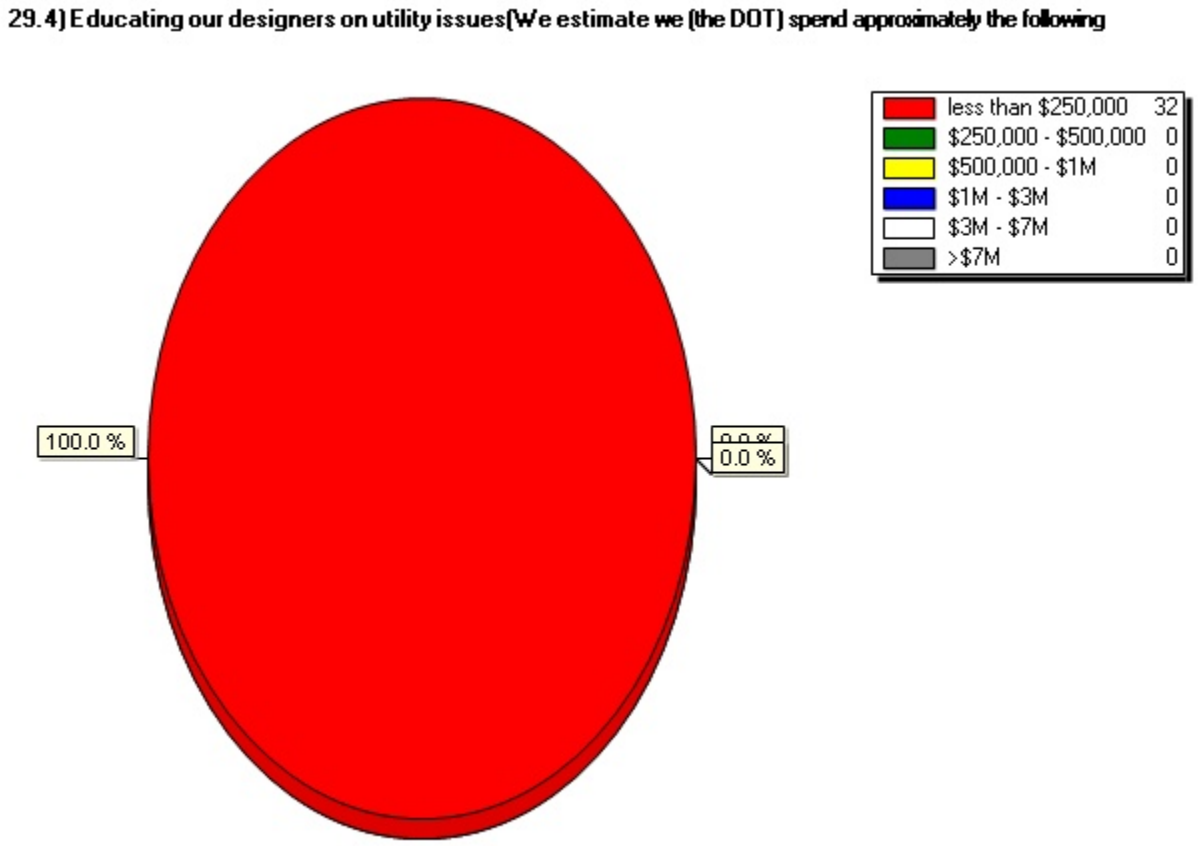
29.2) getting subsurface utility information depicted on design plans by consultant designers(We estimate we (the DOT) spend approximately the following amounts per year)



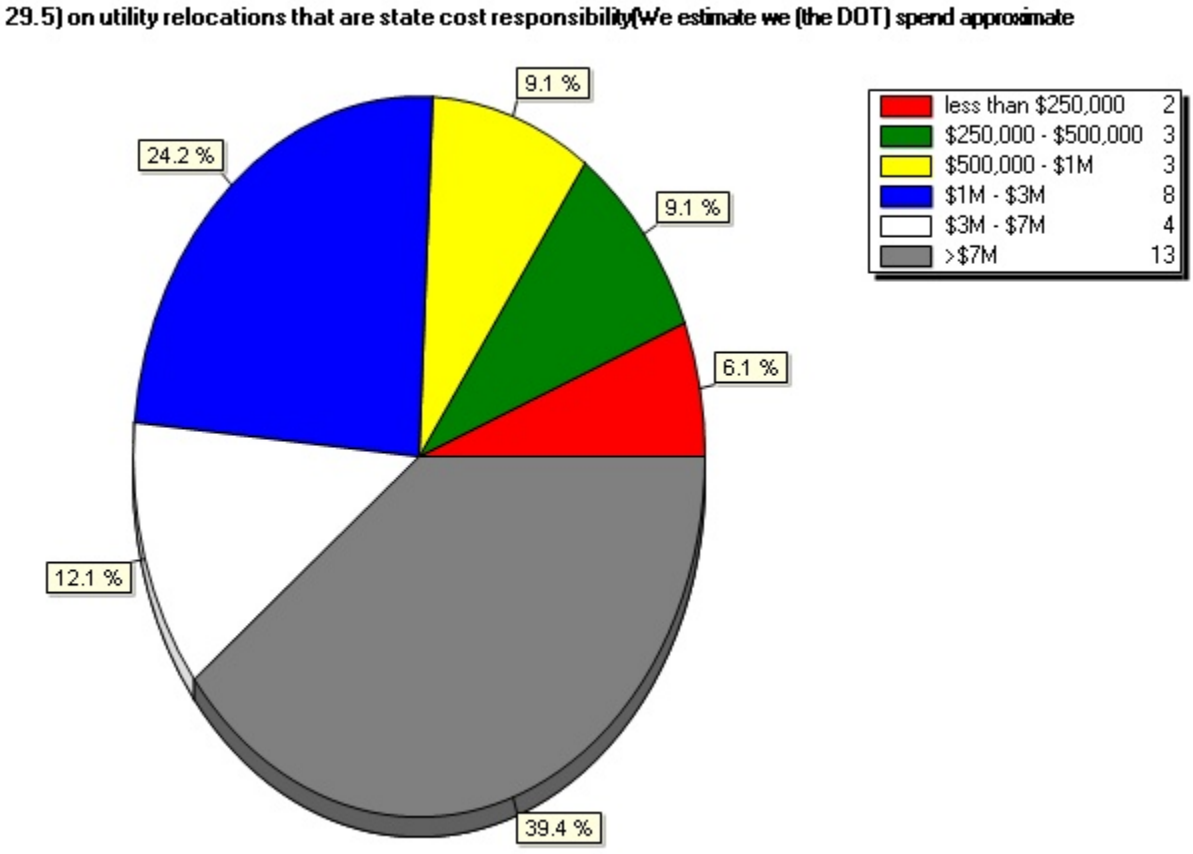
29.3) for a "formal" SUE utility mapping program(We estimate we (the DOT) spend approximately the following amounts per year)



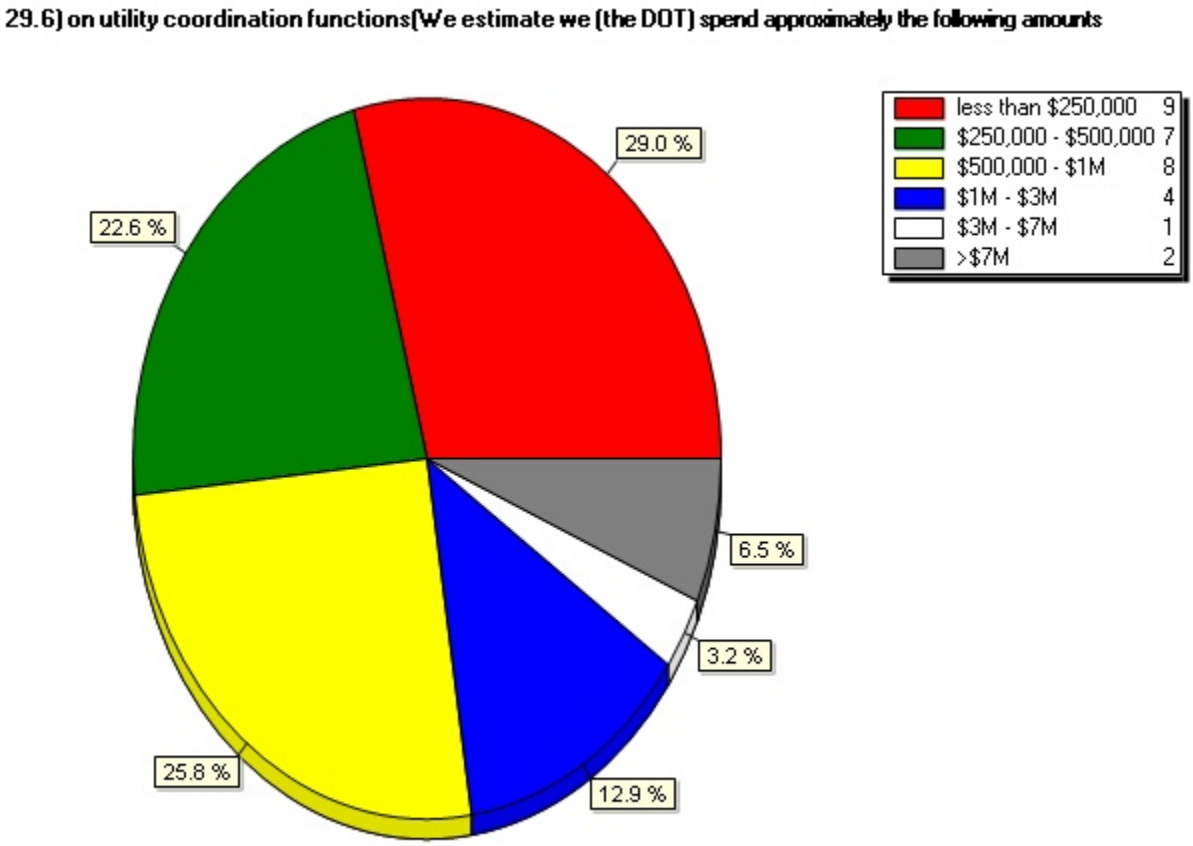
29.4) Educating our designers on utility issues(We estimate we (the DOT) spend approximately the following amounts per year)



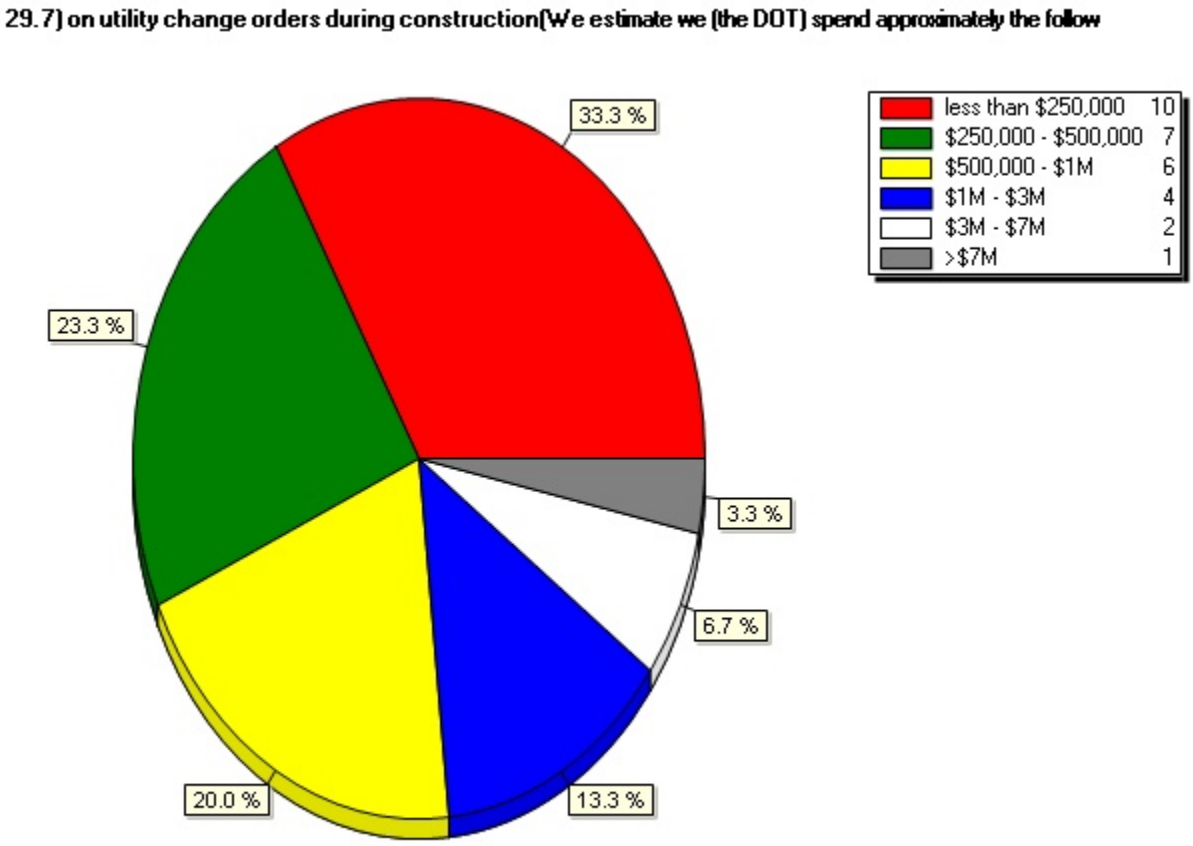
29.5) on utility relocations that are state cost responsibility(We estimate we (the DOT) spend approximately the following amounts per year)



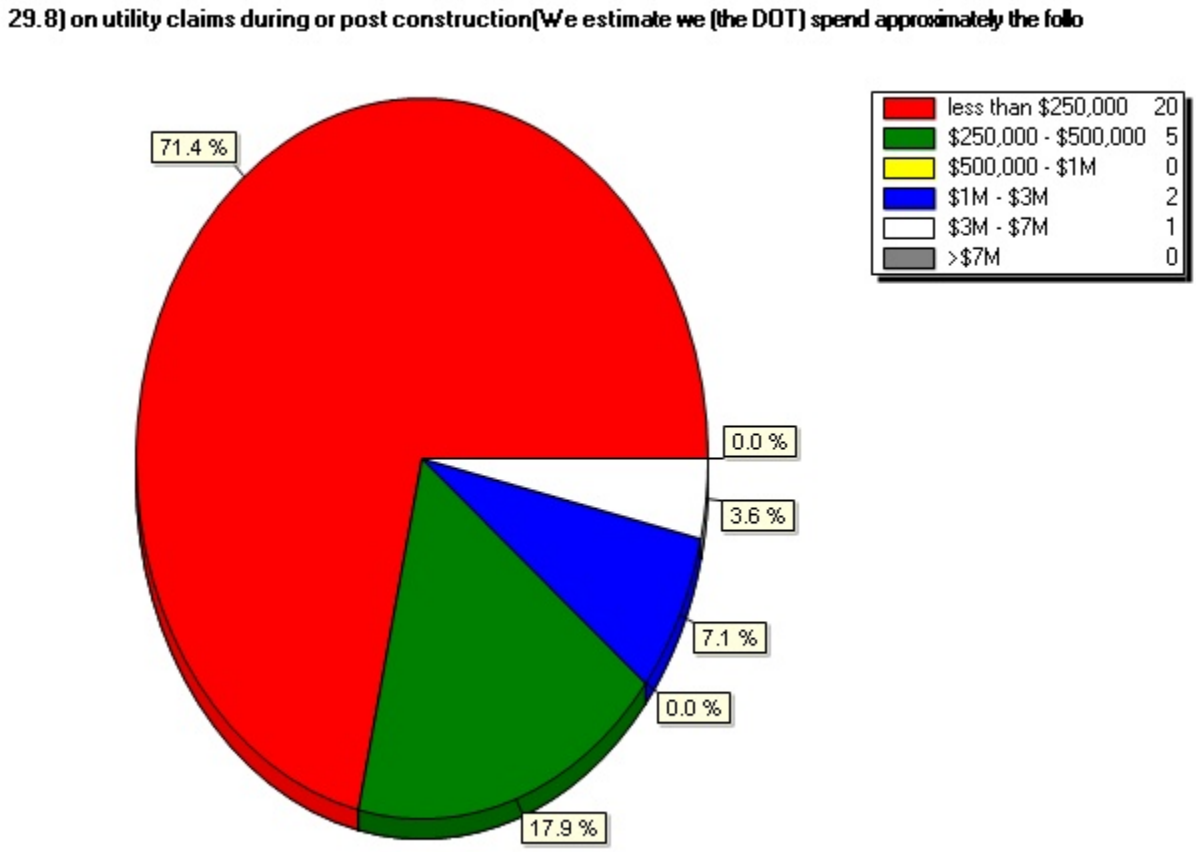
29.6) on utility coordination functions(We estimate we (the DOT) spend approximately the following amounts per year)



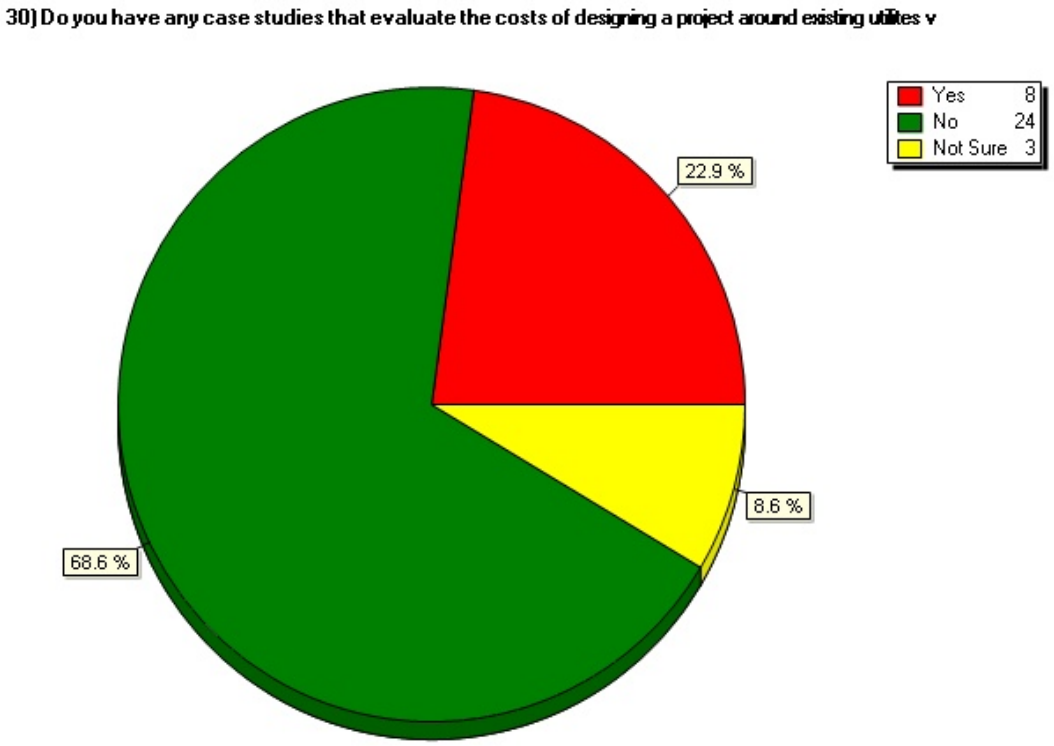
29.7) on utility change orders during construction(We estimate we (the DOT) spend approximately the following amounts per year)



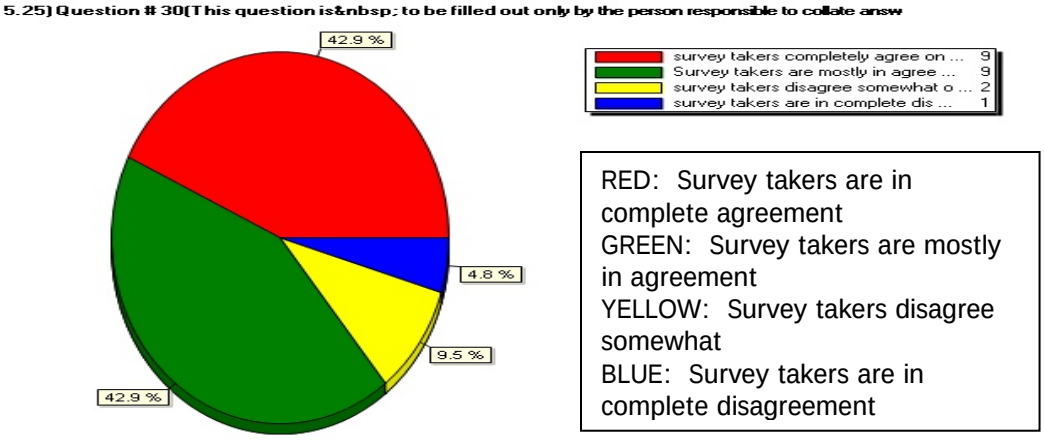
29.8) on utility claims during or post construction(We estimate we (the DOT) spend approximately the following amounts per year)



30) Do you have any case studies that evaluate the costs of designing a project around existing utilities versus relocating them? The official DOT response was:

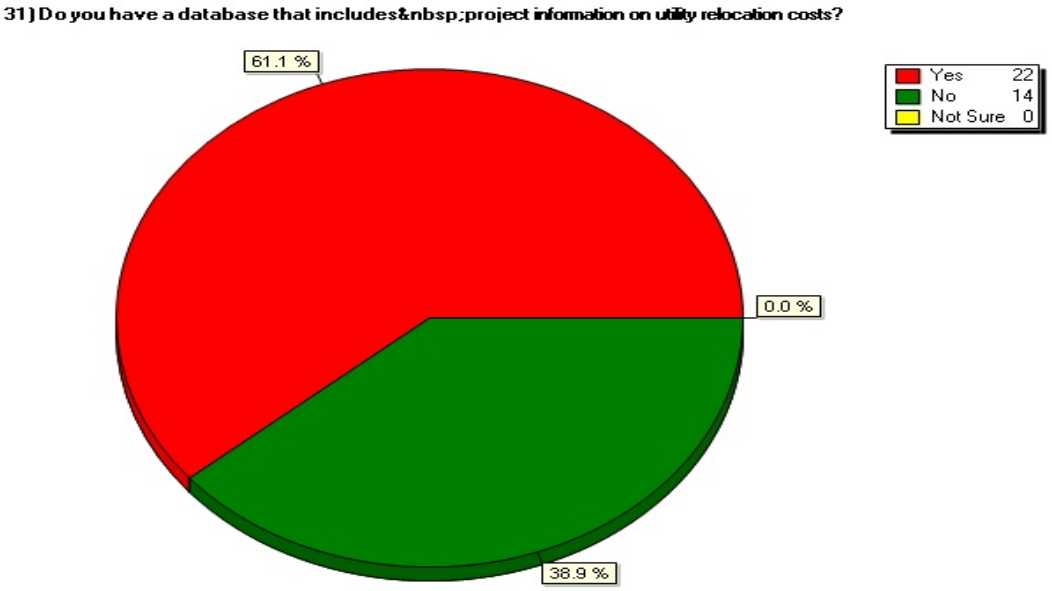


However, within the DOT there was the following diversity of opinion to the official response.

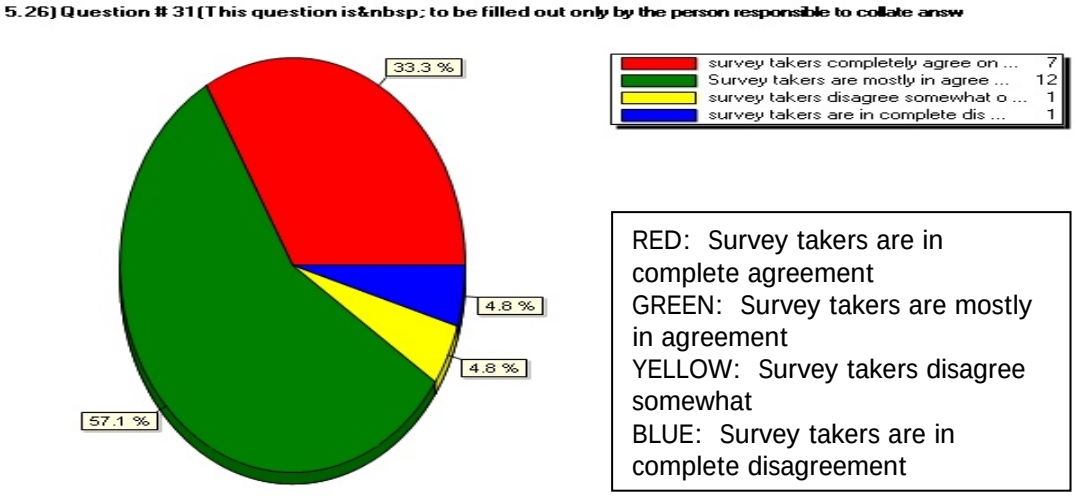


RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

31) Do you have a database that includes project information on utility relocation costs? The official DOT response was:

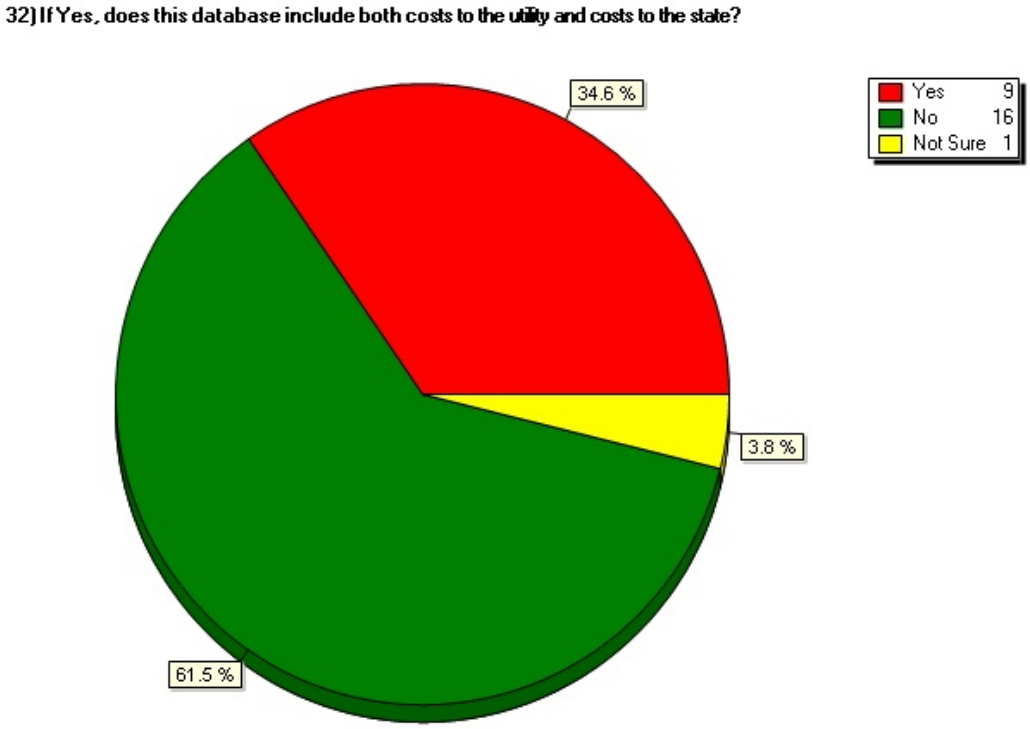


However, within the DOT there was the following diversity of opinion to the official response.

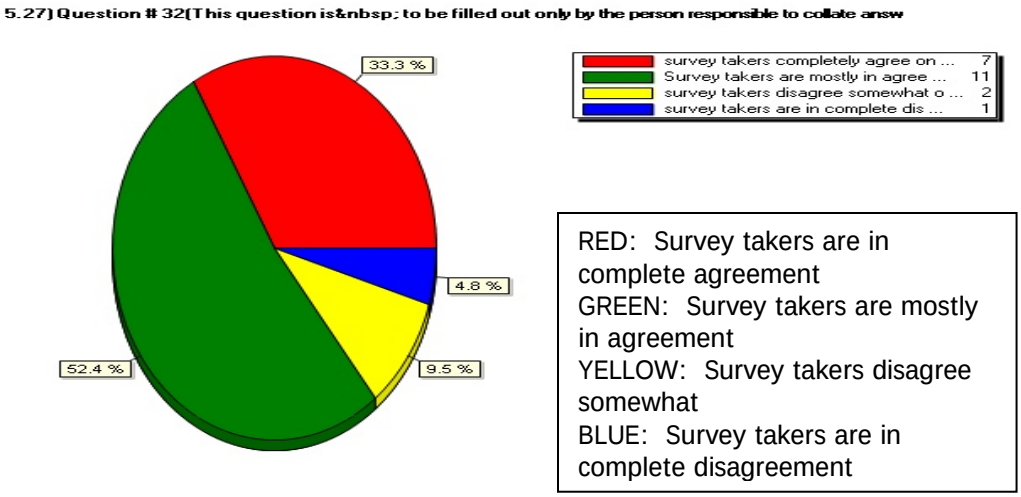


RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

32) If Yes, does this database include both costs to the utility and costs to the state? The official DOT response was:

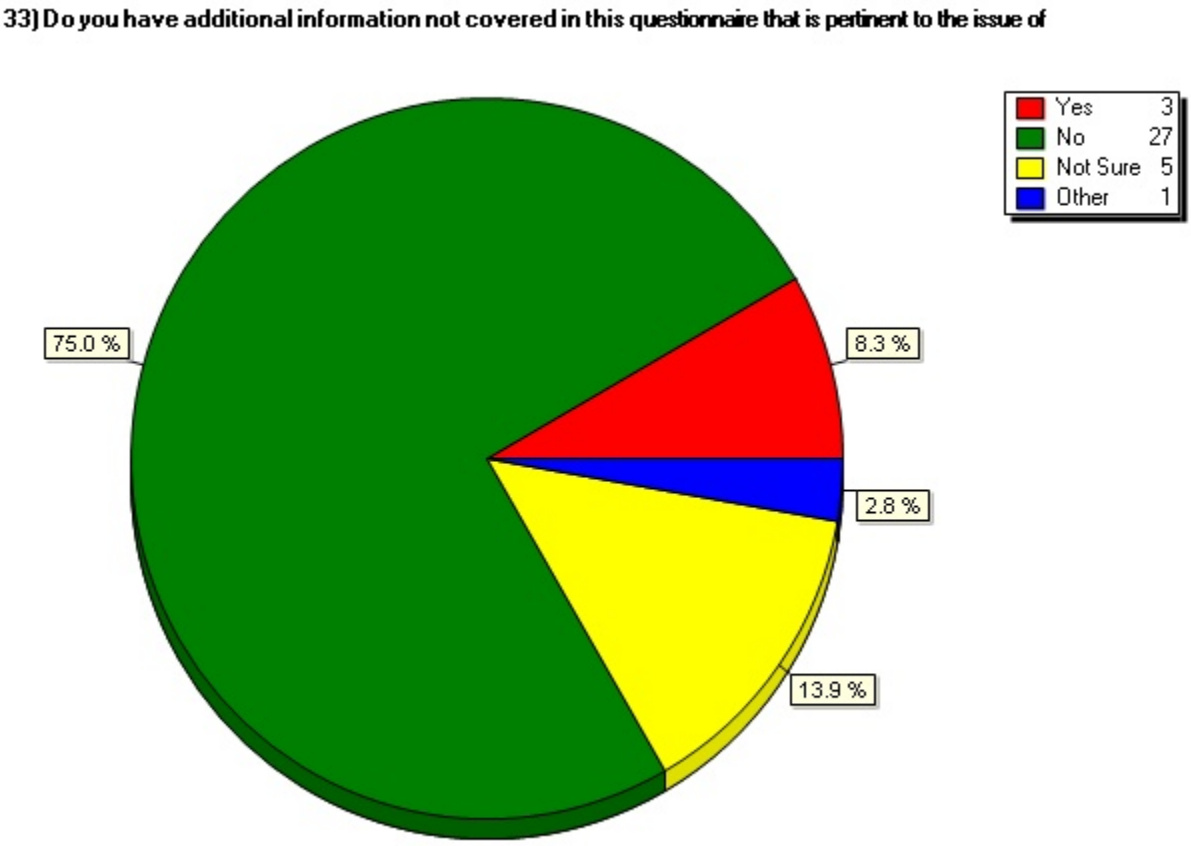


However, within the DOT there was the following diversity of opinion to the official response.



RED: Survey takers are in complete agreement
GREEN: Survey takers are mostly in agreement
YELLOW: Survey takers disagree somewhat
BLUE: Survey takers are in complete disagreement

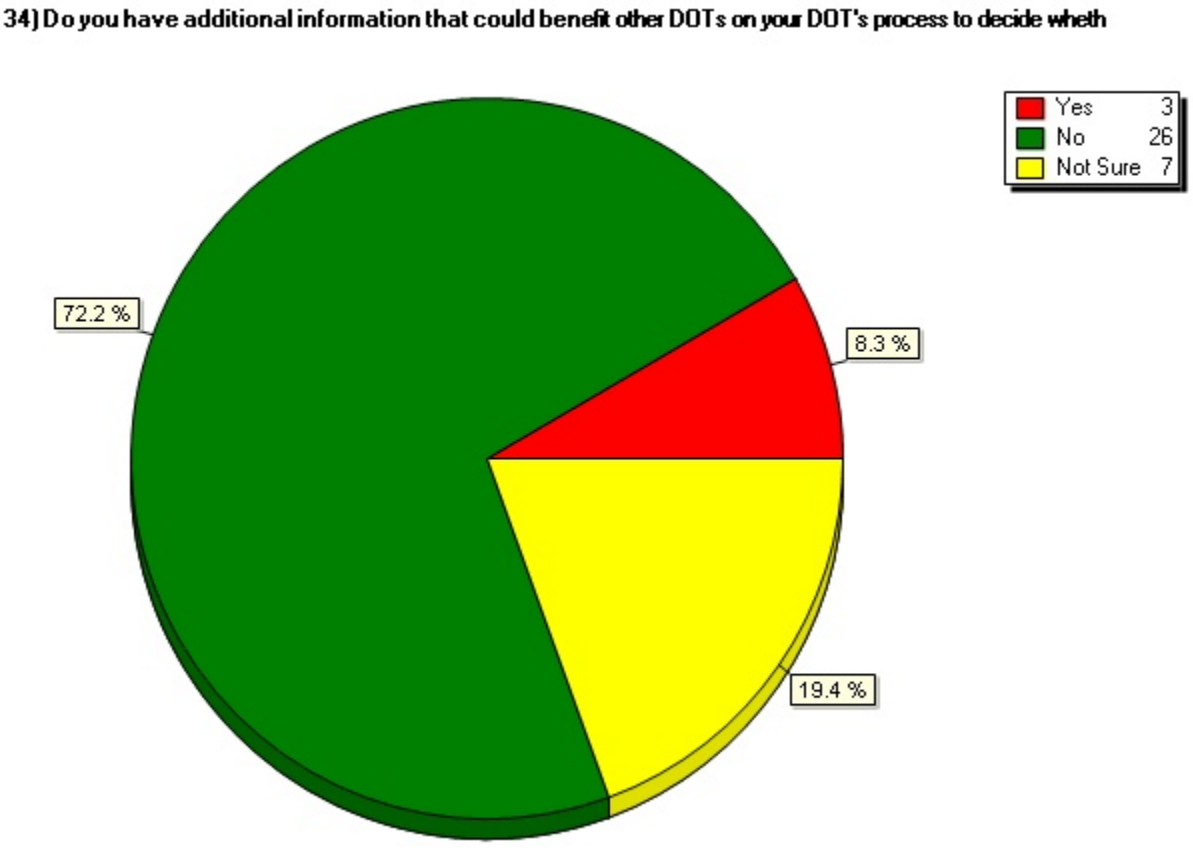
33) Do you have additional information not covered in this questionnaire that is pertinent to the issue of whether it is better to design around utilities or have them relocate?



Other Responses:

Design around to accelerate construction: Design Build
Utility Impact Analysis (UIA)
Each case is considered on its own merit

34) Do you have additional information that could benefit other DOTs on your DOT's process to decide whether to design around a utility or relocate it?



Other Responses:

Design Utility corridors if design cannot accommodate the existing utility in conflict
Implement/Mandate the UIA into the design phase