

DTE Energy®



HEURISTIC EVALUATION

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SI 622 WINTER 2010 TEAM 8

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EXECUTIVE SUMMARY

Heuristic Evaluation Goals

The following report documents our key findings and recommendations based on a heuristic evaluation of the DTE Energy site. The purpose of heuristic evaluations is to find the major usability problems in a system in a fast and economical manner. The basic process involves having a small group of experts evaluate a system based on an agreed upon set of heuristics, or usability standards. We focused our evaluation on the portion of the DTE Energy site related to saving energy. Our goal was to uncover any usability flaws and recommend ways to correct them in order to improve user experience.

Method

For this heuristic evaluation, we made use of Nielson's usability heuristics (Nielson, 1994) as a frame for looking at the design and usability of the site. Based on these heuristics, each team member identified a list of usability issues and the severity of each. The team then aggregated the lists, discussed the most important issues, and prioritized them according to severity. Finally, we used the prioritized list of issues to generate the findings and recommendations in this report.

Findings

Overall, we found that the site complies quite well with Nielson's usability heuristics. The issues we did identify were by and large minor to moderate usability concerns. Generally, the issues were related to consistency and standards, or aesthetic and design. The main categories include inconsistencies in navigation, unnecessary, misleading and mislabeled links, highlighting and hovering issues, and redundant buttons. It is important that the website be consistent with itself and users' experience on the site be consistent with their experiences on similar websites. Although we did not find any severe issues that need to be fixed immediately, we do provide possible solutions for the identified problems in the Findings and Recommendations section of the report.

INTRODUCTION

DTE Energy is a utilities company based in Detroit, Michigan that services the majority of southeastern Michigan. The DTE Energy website allows its utility customers to log into their account in order to check and pay bills online, track usage statistics, and learn about how to save energy. In addition, customers can use the website to learn more about DTE Energy as a company, contact customer service, and update account information when necessary.

One of DTE Energy's goals is to help consumers learn how to conserve energy. Accordingly, our main focus for the DTE Energy website consists of studying areas that allow consumers to keep track of their energy usage and learn how to save energy. Currently, the DTE Energy website has a section titled "Saving Energy" that contains a large amount of static educational material on the topic. This section also has multiple links, called "MyEnergy Analyzer," that go to a third party site, energyguide.com. This site uses individual customer usage data supplied by DTE Energy to create graphs and recommendations for user analysis. Consumers can also analyze their usage by viewing e-bills or the "Annual Comparison" tables on the DTE Energy site.

At this point in our analysis of the DTE Energy site, the team performed a heuristic evaluation of the portions related to saving energy. This heuristic evaluation aimed to explore the DTE Energy site in more detail and attempted to pinpoint interface problems and usability issues it had. These issues would be used to generate appropriate recommendations and solutions, with the ultimate goal of improving user experience. A heuristic evaluation puts the site design and interaction flow into the scope of some best practices and general guidelines in interface and interaction design. While the method is informal because there are no actual users involved (like in a usability test) and no verifiable experimental data (as in a survey), we think that taking a closer look at certain parts of the site proved useful.

METHODS

Preparation

In order to conduct the heuristic evaluation, the team began by discussing which specific portions of the system to focus our analysis on. Based on our past reports and analyses, we chose to focus on the following five sections: “Residential Customers” main page, “Login”, “My Account”, “Billing/Payment” tab, and the “Saving Energy” tab. We selected these sections because each of them pertains to information customers might be interested in when trying to save energy. The team chose to analyze these sections based on the Jakob Nielsen's ten usability heuristics, and his severity scale (Nielsen, 1994) (See Appendix B for more details).

Next, we created an evaluation form to record our analysis in an easily understood and organized manner (See Appendix A). The form included a space to record all the relevant information for evaluation. This included a place to note which section was being referred to, a description of the usability issue at hand, the severity of the problem, and columns to mark the pertinent usability heuristics. Besides the five sections mentioned in the previous paragraph, we also provided the option of “Overall,” in order to identify issues generalized to all the sections. The severity of each issue was ranked on a scale from 1 to 5, where 1 corresponds to a very minor issue and 5 is extremely urgent.

Individual Evaluations

Equipped with the form, each team member took some time to navigate through the system multiple times and to record the usability issues they encountered. Our hope of doing them individually was to each find issues that the others would not have. There was some overlap in our findings, but for the most part we all found different things. Our individual heuristic evaluations can be found in Appendix B. While performing our evaluations, we made sure to keep descriptions of Nielsen's ten usability heuristics nearby (Nielsen, 1994). Whenever we found a problem or a positive usability characteristic, we noted a small description of it, along with the section it was encountered in. When assessing the severity of an issue we factored in the following four considerations: its frequency, impact, persistence, and impact. Specifying these details helped to ensure that we had similar understandings so that our ratings could be comparable.

Consolidating Evaluations

After generating these individual lists, team members met to discuss, group, and prioritize their findings. We began by discussing each of the problems that we had identified in our individual evaluations. The discussion around each problem included coming up with possible solutions, and a consensus on the severity of the issue. At the same time, one team member recorded the conclusions of each problem to form the aggregated list of usability issues. Then, we generated some recommendations for addressing the most frequent and important problems. Many of the recommendations are straightforward fixes (move this here, rephrase this error message), but they are still important and will likely improve customer experience. During this meeting, we also decided to move away from a 1-5 severity scale to simply categorizing severity as "Cosmetic Problem," "Minor Problem," "Moderate Problem," etc. for the findings and recommendations. We think that describing the type of problem is more effective than just providing a number.

FINDINGS & RECOMMENDATIONS

Our findings from this heuristic evaluation uncovered cosmetic and aesthetic issues, as well as interaction-based problems that exist across multiple pages. We list them here, along with the Nielsen heuristics they correspond to and a severity description to help assess which are most important to address.

Summary

We did not find any major or extremely severe problems with the system. Most issues are minor to moderate and may not even be experienced or noticed by some users. Nevertheless, it is impossible to tell who is experiencing what and how that impacts their experience on the site. Since most of these issues are relatively easy to fix, we recommend taking a look at the possible solutions and implementing some fixes.

Key Findings and Recommendations

Finding # 1: Redundancy and complexity in the navigation

Nielsen's heuristics: Aesthetic and minimalist design, user control and freedom

Severity: Moderate Problem

The issue that was noticed by all our evaluators is the redundancy and complexity in the left navigation panel. For example, "Insulation Rebates" is in "Rebates and Offers" but also in "Weatherization". As it stands, the categories in the navigation are not congruent, nor are they hierarchical (See *figure 1*).

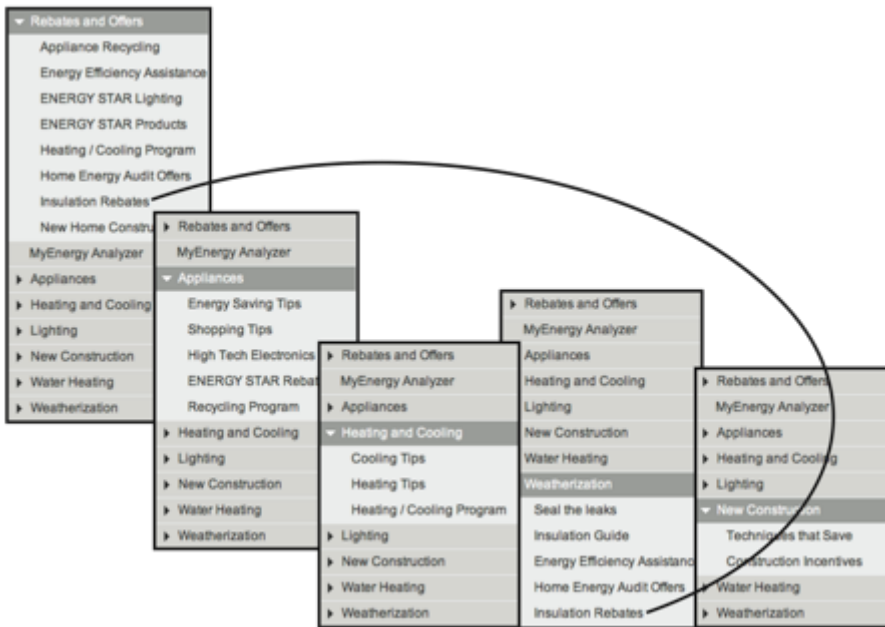


Figure 1: DTE's site has a complex and redundant organization scheme.

Another example is under "Appliances" there is "Energy Saving Tips", but there are also "Cooling Tips" and "Heating Tips" under "Heating and Cooling". Also, "EnergyStar Rebates" is under "Appliances" although it seems more reasonable to belong in "Rebates and Offers." As found in accepted usability studies, these properties are necessary for users to understand and remember how to navigate the site[1].

As discussed in our comparative analysis report, one of DTE's direct competitors — Florida Power & Light Company — has a similar navigation system for their energy saving section. It contains very similar items, serves the same purposes which makes a nice comparison with DTE's site[2].

Save Energy & Money

Causes of High Bills

Interactive House

Top 10 Tips

Home Energy Survey

▼ Appliance Savings

A/C & Ceiling Fans

Pools

Spas

Water Heaters

Dishwashers

Refrigerators/Freezers

Stove & Ovens

Washers & Dryers

Lighting

Home Office

Seasonal Residents

Online Energy Store

Programs & Solutions

Figure 2: FPL has a good example of a straightforward but comprehensive- navigation.

As shown in figure 2, FPL includes saving tips for different appliances in a category called "Appliance Savings" which makes it easier for users to find saving tips on specific appliance with fewer steps[3]. We recommend redesign of DTE's navigation panel to reduce redundant links and organize links in a simpler and clearer fashion.

Finding # 2: "Analyze my Bill" in left navigation goes to a third party website -MyEnergy Analyzer.

Nielson's heuristics: Visibility of system status

Severity: Moderate problem

When users are logged into their accounts, in the left navigation panel there is a section called "Analyze my Bill". Upon clicking this link, users will be directed to a third party website, energyguide.com [<https://www.energyguide.com/ibp/BillCenter.aspx>] (See figure 3). Users' personal information such as name, address, account balance, etc. will be transferred to this website. We consider this a violation to the heuristic: visibility of system status.

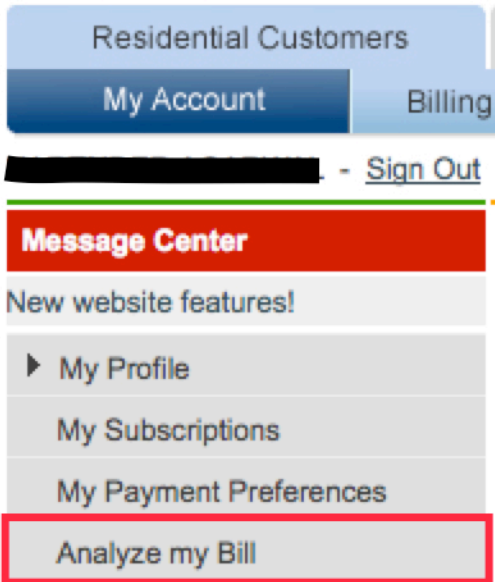


Figure 3: "Analyze my Bill" in left navigation directs users to a third party website

Our survey analysis revealed that 46% of respondents are aware of and likely have used "MyEnergy Analyzer" "to track energy usage"(37%) and "to find energy saving tips" (15%). However, we think that most of them are not aware that they were directed to another site.

We recommend that users be informed that on clicking this link they will be directed to a third party site and that their sensitive information will be revealed to them too. When being provided with this information, users should have the options to continue or cancel this operation.

Finding # 3: Navigation selection for "My Account" section

Nielson's heuristics: Aesthetic and minimalist design, consistency and standards

Severity: Minor problem

Often the "My Account" button is not highlighted when the current page (the one the user is viewing) is in the My Account section (See Figure 4). This makes it look like the user is not in any section, which is confusing.

The other sections such as "Billing / Payment" are highlighted (See Figure 5) when users are in them. To be consistent, all pages should exist within a section and the corresponding tab should be highlighted as a wayfinding device.

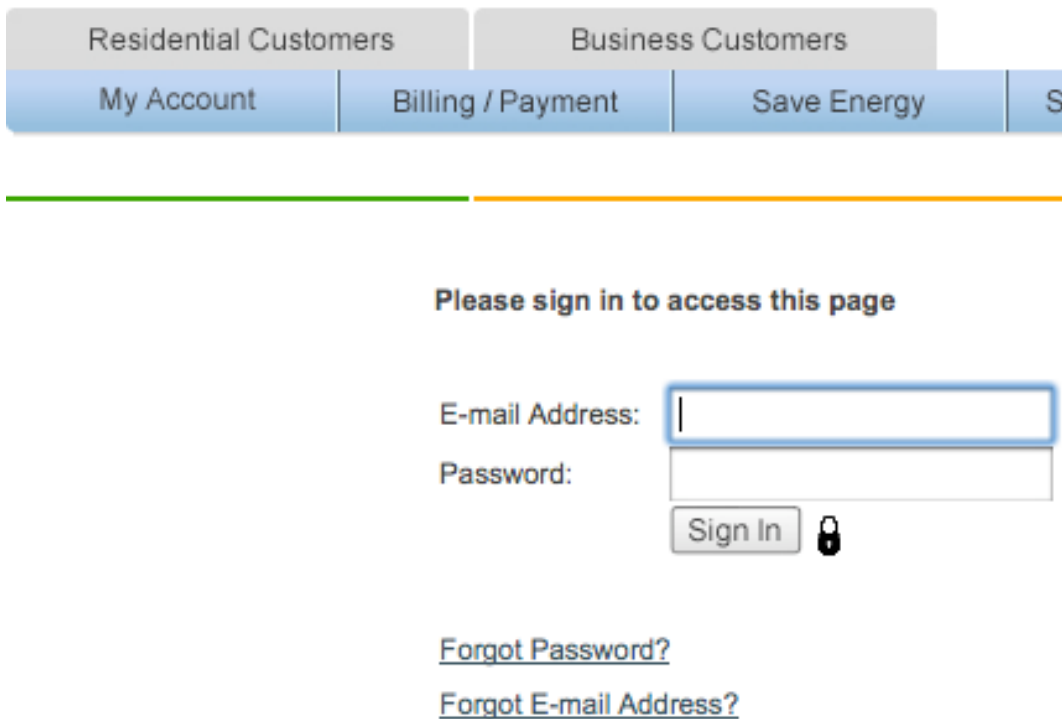


Figure 4: When signing in, no navigation tab is selected, which can be confusing for users.

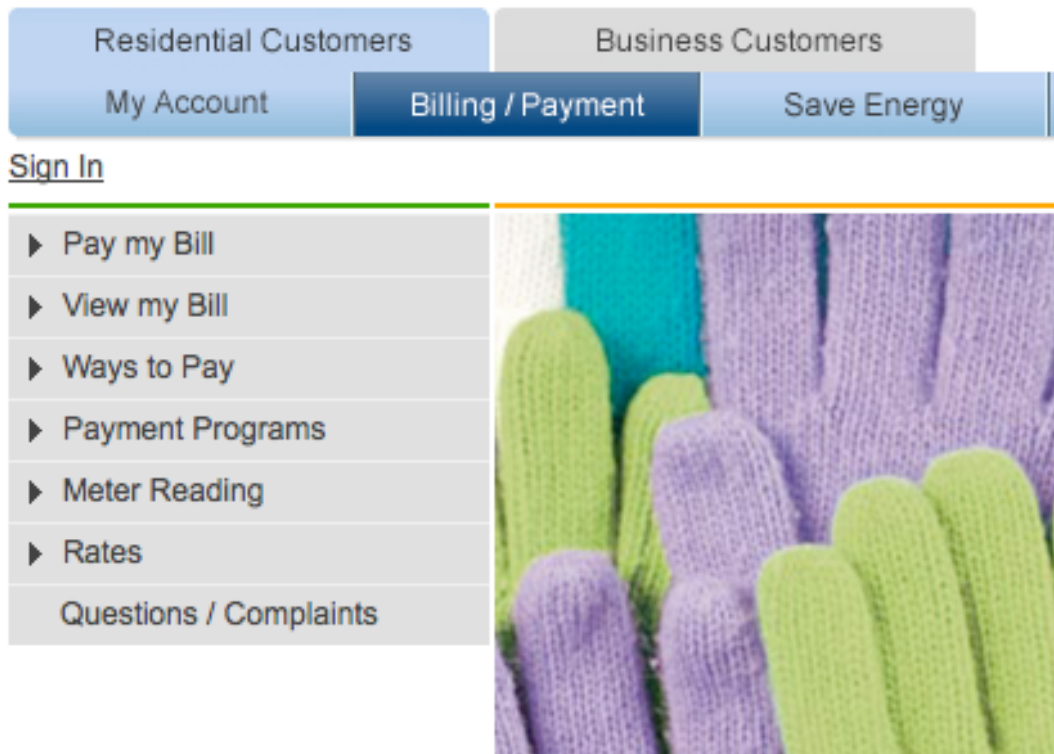


Figure 5: The "Billing/Payment" tab is highlighted when the user is in that section.

Finding # 4: Sign in link placement

Nielson's heuristics: Aesthetic and minimalist design, consistency and standards, match between system and the real world

Severity: Minor Problem

The positioning of the "Sign In" link wastes space and is not always necessary (See Figure 6). It appears on pages like the "Contact Us" page, on which signing in is not a priority. We understand that link placement consistency is important (so that users always know where to find it), so it should be placed elsewhere on the site where it has less of a space-reducing impact. As it is now, the link is small but it wastes all the space to its right, which pushes the rest of the content down. On smaller screens this could especially be an issue. One solution is to place it first in the left-hand navigation menu, for example, or a second is to put it on the same line as the "Residential Customers" and "Business Customers" tabs (but styled differently from these links).

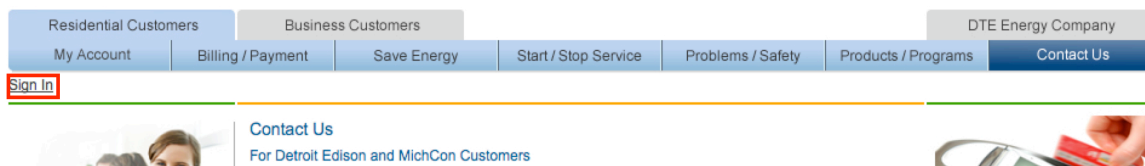


Figure 6: The "Sign In" link placement wastes all of the space to its right and pushes the rest of the content down, such that less of it will be above the fold on small screens.

Finding # 5: Redundant twitter links

Nielson's heuristics: Aesthetic and minimalist design

Severity: Minor Problem

On multiple pages, including the "Residential Customers" page [http://www.dteenergy.com/residentialCustomers], there are two buttons that go to the same Twitter URL. This is somewhat redundant and visually unappealing (See Figure 7).

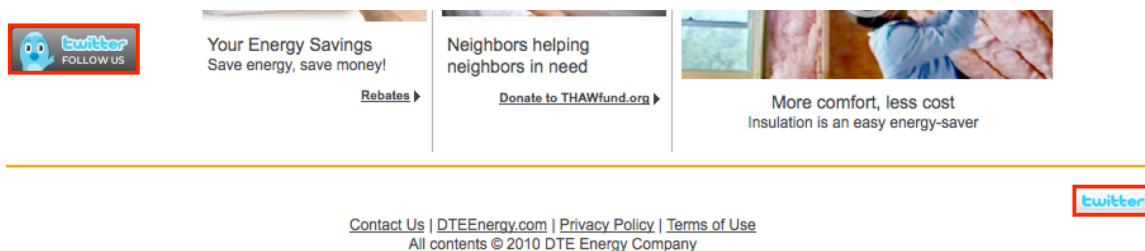


Figure 7: There are multiple buttons that link to Twitter on some pages of the site

Our recommendation is to have one Twitter link in the footer of the site. This removes the confusion while still driving people towards Twitter. The consistency in the link placement is also important, so if people forget the URL they can find the link again, from any page.

Finding # 6: Mislabeled back links

Nielson's heuristics: Consistency and standards

Severity: Moderate Problem

If a user is looking at their Account Summary and then clicks to view their Account History, there is a button at the bottom that says "Back to account details." The "back" portion makes it sound like a back button, but when clicked it goes to the Account Details page. This is misleading because it is possible that the user was never on the Account Details page.

People browsing the web are used to "back" doing the same thing as the back button. We suggest modifying the button so that it actually goes back in the user's history, or so that it says "View your account details" instead.

Finding # 7: Image text on hover

Nielson's heuristics: Consistency and standards

Severity: Minor Problem

Users are accustomed to text online changing on hover when it acts as a link to a different page. DTE does this for HTML text, but there are images that have text in them that are used as images (See *Figure 8*).



Seal the leaks
Improve energy efficiency and comfort

Figure 8: This image is a link, but the text does not change on hover.

Our recommendation is to use HTML for all text, including links below images, so that it can act like other text on the page. This includes changing on hover, for example by underlining or changing color. (In addition, there are other benefits to using only HTML text and not putting text in images.)

DISCUSSION

The purpose of this study was to identify any major usability problems in the portions of the DTE Energy site that relate to saving energy. The team used the technique of heuristic evaluation to accomplish this goal. Although we were able to identify some usability problems and suggest possible solutions, our study did have some shortcomings. First, the heuristic evaluation was limited by the evaluators lack of experience with this type of work. This study was each team member's first experience with heuristics and heuristic evaluations. As a result, it is likely that we did not catch many potentially important usability errors. Or that we incorrectly categorized their severity. There is no doubt that more critical opinions of the site would produce additional useful feedback, especially if these opinions are generated using a set of usability heuristics.

A second shortcoming of this analysis is the subjective nature of heuristic evaluations. They are based solely on the opinions of a small group of people. It is very possible that some of the features of the system that we had problems with do not bother others at all. Along the same lines, there are likely to be issues that we completely missed but cause severe usability issues for some people. Also, it is feasible that the same site characteristics affect various users in entirely different ways, depending on their experience. For example, being School of Information students, the team is quite competent with technology and spends a large amount of time online every week. We are good at solving problems when we encounter them on websites. As a result, we might have encountered problems while evaluating the DTE Energy site, but solved them so automatically that we did not even realize that an issue exists.

Third, due to limitations, the number of findings and recommendations that we could include in this report is less than the total number of issues we found. The team included what they thought was most important in the main report, but please consult Appendix A to see the entire list of findings.

Lastly, this document should be viewed as a supplement to the other reports we have produced about the DTE Energy customer website. It is in no way a complete set of recommendations, since it does not (for example) include ideas for new features or problems that specific users have had with the website.

CONCLUSION

Our heuristic evaluation of the saving energy related content of the DTE Energy site provided lots of valuable information about the usability of the site. The team did not find any severe usability problems with the system, a sign that it already works quite well. All of the usability problems that we did discover were minor or moderate issues. As a result, most of our recommendations include relatively straightforward fixes for the identified problems.

Many of our findings were related to consistency, or aesthetics and design. Usually, either parts of the website should be more consistent with other parts in terms of navigation and labeling of links, or the experience on the website should be consistent with the user's experiences on other websites and on their computer. Users expect certain things online (like the underlining of text links) and can be confused when they are absent or different.

In order to solve these minor usability issues and scaffold a more comfortable user experience, we suggest applying the specific recommendations mentioned earlier. These will lead to reduced redundancy, more intuitive navigation, and consistency in labeling. As a result, the user will have a more positive experience with the DTE Energy site.

Performing a heuristic evaluation allowed the team to analysis the usability of the DTE Energy site in a detailed manner without the use of test participants. It revealed some places where a user might have difficulty with the site. In the future, we look forward to further analyzing some of these trouble spots through formal usability testing.

REFERENCES

[1] Hundhausen, C. D. and Brown, J. L. 2007. An experimental study of the impact of visual semantic feedback on novice programming. *J. Vis. Lang. Comput.* 18, 6 (Dec. 2007), 537-559. DOI= <http://dx.doi.org/10.1016/j.jvlc.2006.09.001>

[2] Retrieved February 11, 2010 from www.fpl.com

[3] Hundhausen, C. D. and Brown, J. L. 2007. An experimental study of the impact of visual semantic feedback on novice programming. *J. Vis. Lang. Comput.* 18, 6 (Dec. 2007), 537-559. DOI= <http://dx.doi.org/10.1016/j.jvlc.2006.09.001>

[4] Nielsen, J. (1994) Heuristic Evaluation. In J. Nielsen. & R. L. Mack (Eds.) *Usability Inspection Methods*. New York, NY: John Wiley & Sons.

Appendix A: Consolidated Heuristic Findings

Consolidated heuristic evaluations			Nielsen's Usability Heuristics										
#	Section	Issue	1	2	3	4	5	6	7	8	9	10	Severity
1	Billing/Payment	Annual Comparison uses the term CCF without explanation				x							2
2	Billing/Payment	Clicking to the printer-friendly Annual Comparison requires sign-in again, which seems unnecessary					x						2
3	Billing/Payment	The language used like "Current Bill Inserts" and "Water Heating Program" are really awkward		x									2
4	Login	Links on main page not available until hover	x										2
5	Login	When re-authenticating, it says the user's name but the email address is not filled in					x						2
6	My Account	Account number and address displayed twice in the same screen - under account summary and payment activity								x			3
7	My Account	"Click here to view bill" - its not obvious that this will open up a pdf	x			x		x					2
8	My Account	"Analyze my Bill" in left nav goes to MyEnergy Analyzer. User isn't warned that they're going to a 3rd party site.	x										3
9	My Account	Many links from here go to the Billing/Payment Tab. Ex) Payment History, Annual Comparison etc...	x			x		x					2
10	My Account	Highlighting of "My Account" button when selected				x				x			1
11	My Account	Dropdown says "click here to view bill" but it's a dropdown so clicking it doesn't go anywhere		x		x		x					1
12	My Account	Message center has a red background and looks like an error								x			2
13	My Account	Clicking to Account History from the account summary and then clicking "back" goes to account details, not the page the user was previously on											4
14	My Account - Account Details	There's a link to a "Bill Statement Summary" but when the link is clicked, the page is called "Bill Statement Detail"				x							2
15	My Account - Account Details - Bill Statement Summary	Long table with small text. It's hard to read. The lines and columns could be differentiated with better use of color. Or maybe provide option of how many months should be visible.								x			2
21	Overall	MyEnergy Analyzer linked from multiple places in website, under many different names.				x		x					3
22	Overall	Reduction of granularity of the dynamic content			x								3
23	Overall	Reduce redundancy and complexity in the navigation			x					x			3
24	Overall	Redundant twitter buttons		x		x				x			2
25	Overall	Signin link not necessary on every page		x		x				x			2
26	Overall	Search results page is not styled the same as the rest of the site								x			1
27	Overall	Text in images doesn't underline on hover, so the only way users can tell they're links is by the pointer changing to a hand				x							3

Possible Sections:

Overall
Login
Residential Customers
Billing/Payment
Saving Energy
My Account

Nielsen's Usability Heuristics (1994)

1. FEEDBACK: Visibility of system status
2. METAPHOR: Match between system and the real world
3. NAVIGATION: User control and freedom
4. CONSISTENCY: Consistency and standards
5. PREVENTION: Error prevention
6. MEMORY: Recognition rather than recall
7. EFFICIENCY: Flexibility and efficiency of use
8. DESIGN: Aesthetic and minimalist design
9. RECOVERY: Help users recognize, diagnose, and recover from errors
10. HELP: Help and documentation

Severity rating scale

- 0 = don't agree that this is a usability problem
1 = cosmetic problem
2 = minor usability problem
3 = major usability problem; important to fix
4 = usability catastrophe; imperative to fix

Appendix B: Combined Individual Heuristic Findings

Individual Heuristic Evaluations				Nielsen's Usability Heuristics										
#	Evaluator	Section	Issue	1	2	3	4	5	6	7	8	9	10	Severity
1	Nehal	Residential Customers	Twitter link in two places- footer and body				x				x			1
2	Nehal	Residential Customers	"Free Energy Efficiency Kit" link goes to MyEnergy Analyzer. This isn't clear from the title.				x							3
3	Nehal	Residential Customers	"More comfort. Less Cost." - Not immediately clear that this is a video. But it is easy to undo this.			x	x							2
4	Nehal	Login (positive)	Incorrect Login Info - system provides helpful error message.	x								x		0
5	Nehal	My Account	Account number and address displayed twice in the same screen - under account summary and payment activity								x			3
6	Nehal	My Account	"Click here to view bill" - its not obvious that this will open up a pdf	x			x		x					2
7	Nehal	My Account (positive)	Most options are clearly marked - pay bill, enroll in ebill, view history etc...						x					0
8	Nehal	My Account	"Analyze my Bill" in left nav goes to MyEnergy Analyzer. User isn't warned that they're going to a 3rd party site.	x										3
9	Nehal	My Account	Many links from here go to the Billing/Payment Tab. Ex) Payment History, Annual Comparison etc...	x			x		x					2
10	Nehal	Overall	MyEnergy Analyzer linked from multiple places in website, under many different names.				x		x					3
11	Nehal	My Account - Account Details	There's a link to a "Bill Statement Summary" but when the link is clicked, the page is called "Bill Statement Detail				x							2
12	Nehal	My Account - Account Details - Bill Statement Summary	Long table with small text. It's hard to read. The lines and columns could be differentiated with better use of color. Or maybe provide option of how many months should be visible.								x			2
13	Nehal	Billing/Payment - View my Bill (Left Nav)	"Current Bill Inserts" - It isn't obvious what this means		x									2
14	Nehal	Save Energy	Some pages are interlinked multiple times from different pages within the section				x		x					3
15	Nehal	Save Energy	Links in left nav are sometimes repetitive and not organized intuitively. ex) There's a "Heating and Cooling" tab and a "Water Heating" tab. There's "New Construction" and "Find a Contractor."		x		x		x					3
16	Nehal	Save Energy	There's a "Seal the Leaks" video on the mainpage of Save Energy which isn't clearly marked a as video.			x	x							2

Possible Sections:

Overall
Login
Residential Customers
Billing/Payment
Saving Energy
MyEnergyAnalyzer
My Account
Visualization

Nielsen's Usability Heuristics (1994)

1. FEEDBACK: Visibility of system status
2. METAPHOR: Match between system and the real world
3. NAVIGATION: User control and freedom
4. CONSISTENCY: Consistency and standards
5. PREVENTION: Error prevention
6. MEMORY: Recognition rather than recall
7. EFFICIENCY: Flexibility and efficiency of use
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Severity rating scale

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