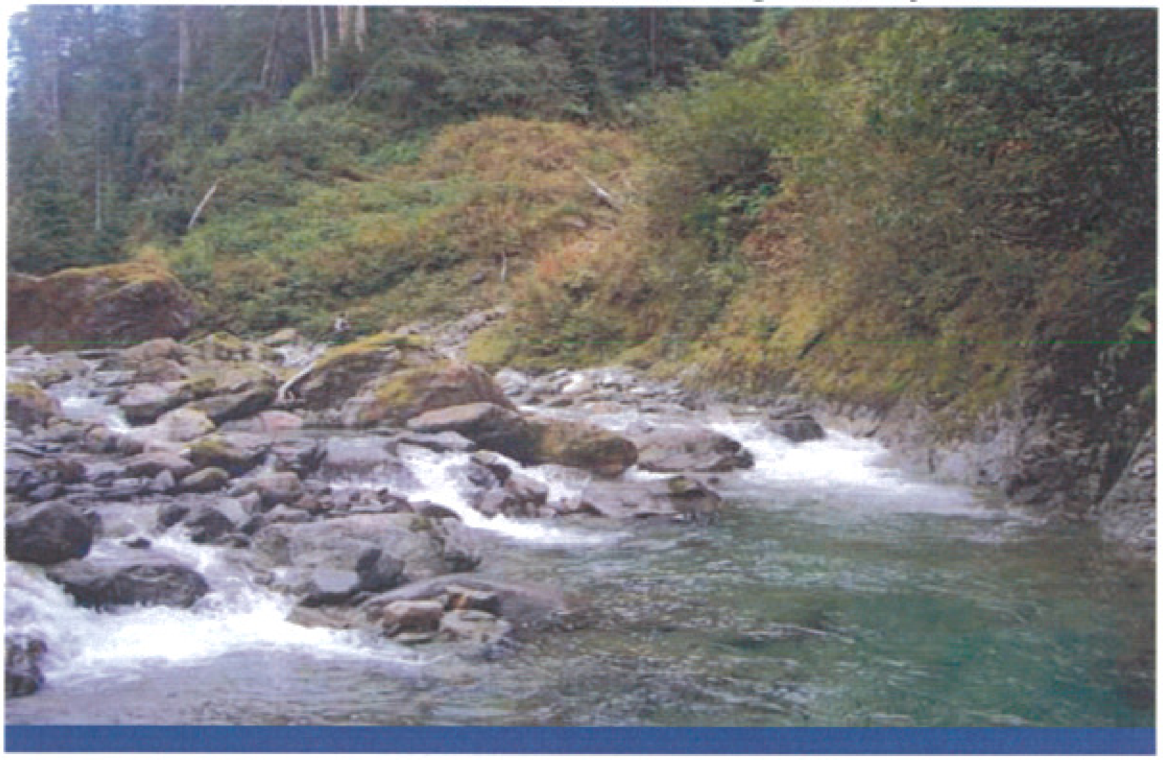
Exhibit CAC# 45-14

CAC Manitoba: Book of Documents
NFAT Review

Tab	Document
1	Benjamin Tal, *Sucking Energy Out of Households* (April 11, 2011), CIBC: Consumer Watch Canada
2	Pan-African Investment and Research Services, *The Impact of Electricity Price Increases and Eskom's Six-Year Capital Investment Programme on the South African Economy*, May 2011 p. i -12
3	American Coalition for Clean Coal Electricity, *Energy Cost Impacts on American Families, 2001-1012*, February 2012
4	Adrienne Warren, *Energizing Household Energy Efficiency*, (June 22, 2011), Scotiabank Group: Global Economic Research
5	BC Hydro, *Site C Clean Energy Project: Information Sheet – Cost Estimate for Site C*, January 2013
6	Pitt Meadows City Council, *Minutes of the Council in Committee Meeting,* February 27, 2007
7	BC Hydro, *Environmental Impact Statement: Executive Summary – Site C Clean Energy Project*, July 19, 2013 p. 34-35

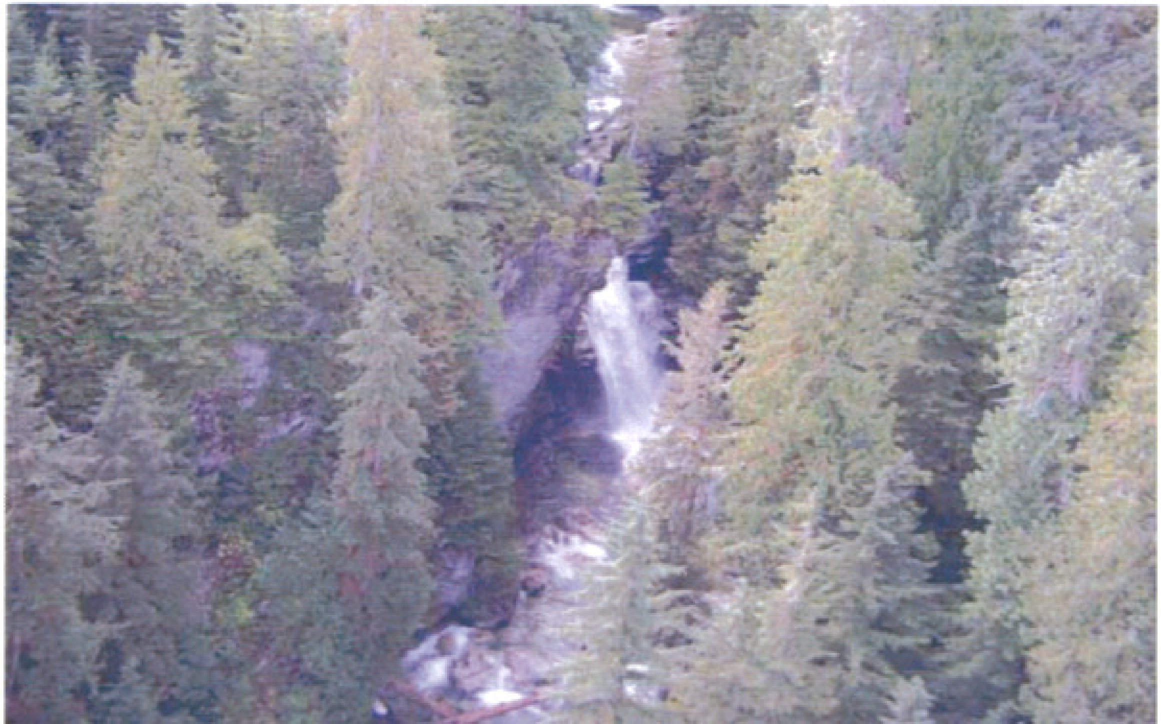


ZZ Creek - 15.0 MW Capacity

Run of River Power Inc.

Homer Creek - 15.0 MW Capacity

Run of River Power Inc.



Boise Creek - 26.0 MW Capacity

Run of River Power Inc.

PROJECT REVIEW PROCESS

Reviewable under the British Columbia Environmental Assessment Act (BCEAA)

Review process requires extensive assessments
- Economic effects
- Environmental effects
- Community, Social and Recreational effects

Technical studies are ongoing to satisfy rigorous regulatory and legislative requirements

Permits and authorizations also required from numerous review agencies

BCEAA Review

Run of River Power Inc.

REGULATORY AGENCIES

- Department of Fisheries and Oceans (DFO)
- Environment Canada
- Transport Canada, Navigable Waters Protection Division (NWPD)
- BC Ministry of Forests
- BC Ministry of Environment, including BC Parks
- BC Ministry of Energy, Mines and Petroleum Resources
- Provincial Agricultural Land Commission
- Ministry of Agriculture and Land (MAG)
- First Nations
- Key Stakeholders

BCEAA Review

Run of River Power Inc.

PRE-APPLICATION STAGE

Ongoing Studies

- Comprehensive field studies ongoing throughout 2006
- 2007 studies to address "seasonal" data gaps

Initial study findings summarized in the context of BCEAA review requirements

- Economic Effects
- Environmental Effects
- Community, Social and Recreational Effects

All studies consider First Nation issues and concerns

BCEAA Review

Run of River Power Inc.

ECONOMIC EFFECTS

Electricity generated – 55,000 BC homes
- Capacity - 161 MW
- Green Energy - 554 GWh annually

Capital investment - Estimated $329 million

Total contribution to GDP - $129 M
- Direct & Indirect - $100 M
- Spinoffs - $29.1M

Tax Revenue - $26.8 M
- Provincial - $14.8 M
- Federal - $12M

Employment (in person years) - 1,950
- Direct - 1,487
- Indirect - 463

BCEAA Review

Run of River Power Inc.

ENVIRONMENTAL EFFECTS

Comprehensive and on-going field investigations indicate minimal impact to fish and wildlife

Flows released at proposed project intakes will require adequate flow to maintain "habitat" in those areas potentially impacted

'Green' hydro-electric power projects provide a sustainable alternative to polluting energy sources such as coal and natural gas plants

Greenhouse gas ("GHG offsets") approximately 166,200* metric tonnes of CO_2/yr

*Greenhouse gas emissions (0.3 metric tonnes of Carbon Dioxide Equivalent per megawatt-hour (tCO2e/MWh))

BCEAA Review

Run of River Power Inc.

COMMUNITY & REC. EFFECTS

ROR assessing the benefits and opportunities of $329 million investment

- Socio Economic
- Socio Community
- Recreation (Navigational)
- First Nations

Investigations to date identify minimal impacts on community, social and recreational features

ROR is working with various stakeholders to mitigate impacts and is committed to creating and implementing "best practices" in facilitating environmentally sound management plans

BCEAA Review

Run of River Power Inc.

TRANSMISSION OPTIONS

Northern Route

Southern Route

Run of River Power Inc.

Transmission Option 1 - Northern Route

Run of River Power Inc.

NORTHERN ROUTE

13.0 km of new transmission ROW construction over land, including 4.3 km in Pinecone-Burke Provincial Park

19.4 km of transmission line along existing forest roads

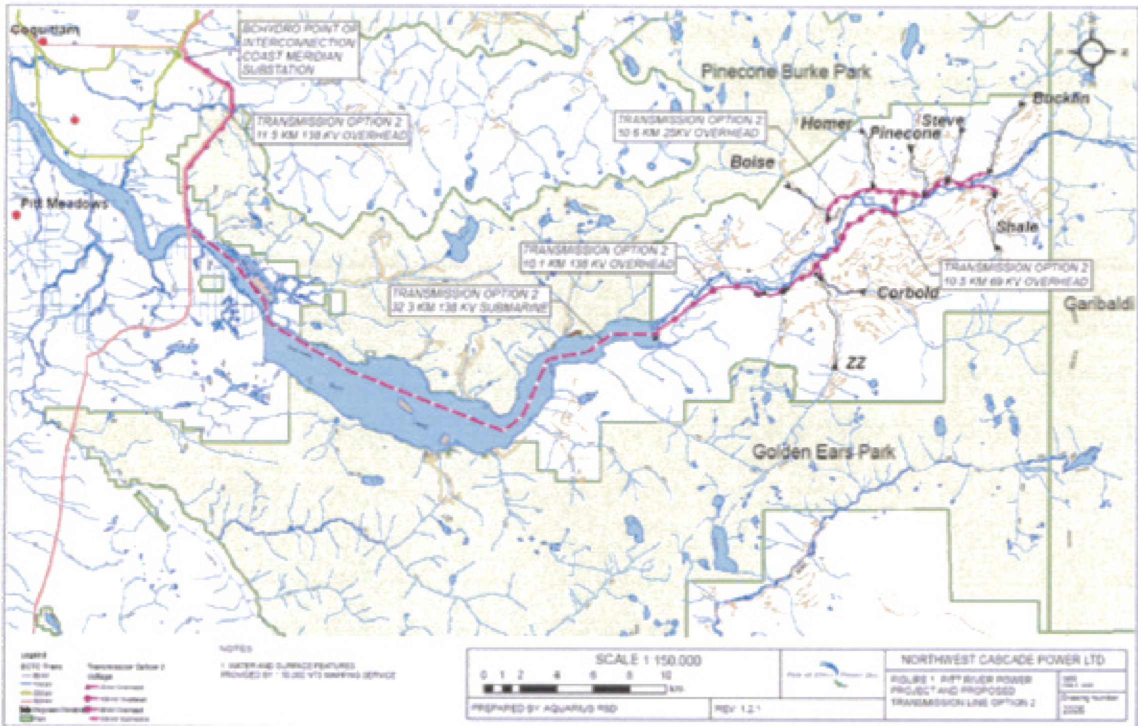
9.9 km proposed line on existing BC Hydro ROW

Minimal environmental effects

- Limited Social, Recreational impacts
- Limited visual impact
- Moderate cost to construct
- Sound technical feasibility
- Feasible connection to BC Hydro grid

Transmission Options

Run of River Power Inc.



Transmission Option 2 – Southern Route

Run of River Power Inc.

SOUTHERN ROUTE

0.7 km new transmission ROW construction over land

32.2 km new transmission ROW construction in aquatic and transitional habitats (potentially impacting wildlife management area)

19.0 km of transmission line along existing forest roads and 10.8 km on existing BC Hydro ROW through rural residential areas, including 5.2 km in Pinecone-Burke Provincial Park

- Significant Environmental effects
- Significant Social and Community impacts
- High visual impacts
- High cost to construct
- Limited technical feasibility; requires upgrades to BC Hydro Grid

Transmission Options

Run of River Power Inc.

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YOUR INPUT IS IMPORTANT

Your comments will

- Help the project team better understand local issues which can be proactively addressed as work continues on BCEAA review process
- Enable ROR to improve the project scope and facility design based on stakeholder input

You can help

- Discuss your issues with our project team or provide comments
- Submit comments at www.runofriverpower.com

A second Public Information Session is planned to

- Discuss future study's findings in more detail
- Outline how public input has been incorporated into the projects design

Thank You for Your Assistance

Run of River Power Inc.

ATTACHMENT 2:

Run of River Power Inc.
Northwest Cascade Power Ltd.

Newsletter Number One
November 2006

Project Overview and Public Consultation Opportunities

Introduction

This newsletter is intended to provide the public with background information to better understand Northwest Cascade Power Ltd's[1] (ROR) proposed development of seven "run-of-the-river" small hydro-electric power projects located in the Upper Pitt River in the Fraser Valley Regional District Area F. The seven streams, which are all tributaries of the Upper Pitt River, are:

- Shale Creek
- Bucklin Creek
- Steve Creek
- Pinecone Creek
- Homer Creek
- Boise Creek
- Corbold Creek / ZZ Creek

Newsletter Objectives

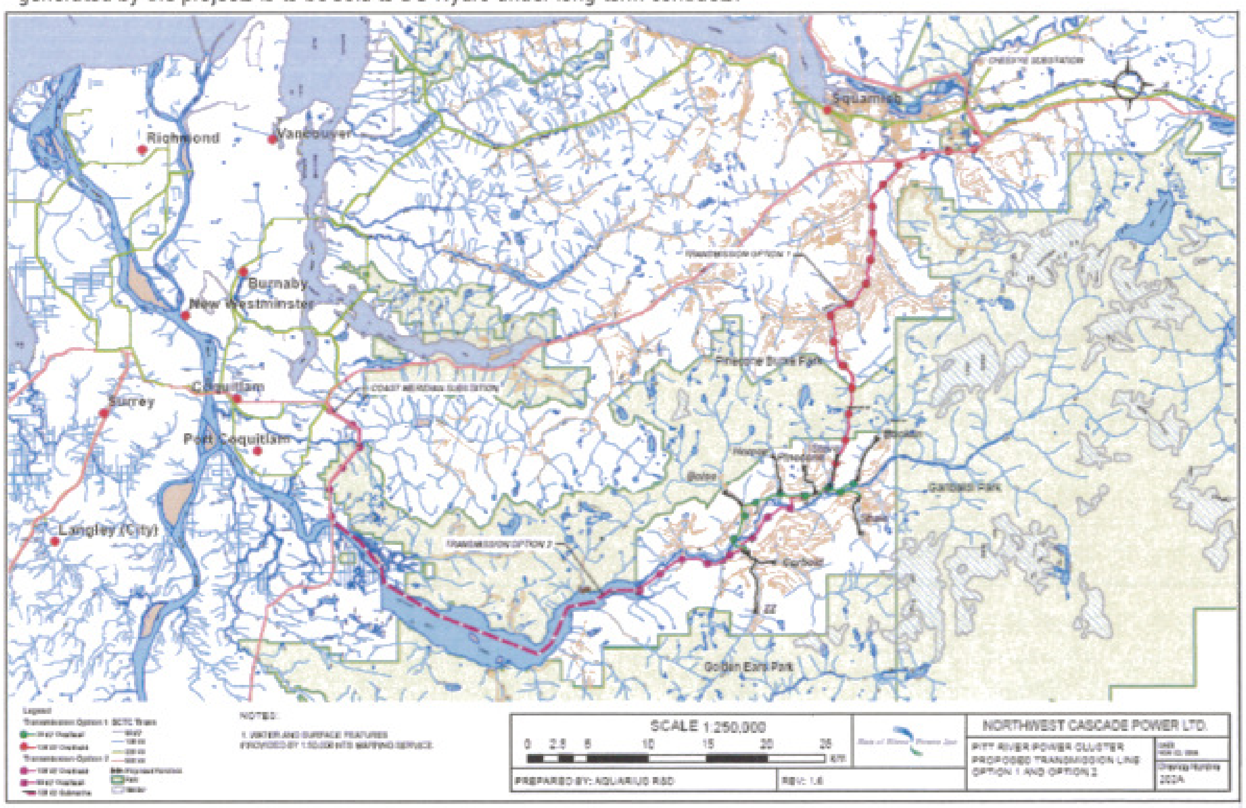
The objectives of this newsletter are to:

- Provide an overview of the public consultation activities being undertaken, and where the technical team receives public input to address identified concerns, to improve our project.
- Describe the applicable environmental assessment and review processes, and summarizes the preliminary findings of ongoing field investigations and studies to support ROR's application for a project certificate from the Environmental Assessment Office.

This is the first of several newsletters that ROR plans to issue to keep stakeholders informed of the process and progress associated with the proposed project development.

Project Location & Potential Capacity

The location for the Upper Pitt River projects is illustrated on the map below. It is estimated that the projects will have a combined generation capacity of 140 MW, providing enough renewable energy to service more than 50,000 homes. The electricity generated by the projects is to be sold to BC Hydro under long-term contracts.



[1] Northwest Cascade Power Ltd. is a wholly owned subsidiary of Run of River Power Inc. (ROR)

Run of River Power Inc.
Northwest Cascade Power Ltd.

Newsletter Number One
November 2006

Background

Run of River Power Inc. is a publicly traded independent power producer, TSXV: ROR. ROR currently operates the 7.6 MW Brandywine Creek hydro-electric power station near Whistler. Brandywine Creek is certified to display the "EcoLogo" brand.

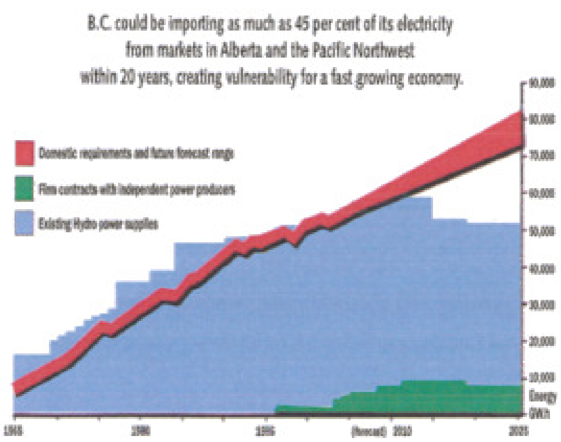
"EcoLogo" is sanctioned by Environment Canada and recognizes the 'green' quality of the power produced and the high environmental standards achieved. ROR plans to achieve this standard with the Upper Pitt River projects.

Why is it important to develop Independent Power Projects in BC?

Energy Shortfall and the Need for Green and Clean Renewable Energy Solutions

It is estimated that within twenty years BC could be importing 45% of its energy from markets in Alberta and the United States due to lack of supply. The Provincial Government and BC Hydro have identified independent power producers in their Integrated Electricity Plan to help address the growing energy gap. The Integrated Electricity Plan also calls for 50% of new energy created to come from renewable sources.

The development of small independent power projects, producing 'green' and clean energy with minimal environmental impacts, represents a key solution to this growing supply issue. The shortfall of power is illustrated in the exhibit below.



Source: BC Hydro, 2006 IEP filed with BCUC
www.bchydro.com/rx_files/info/info43492.pdf

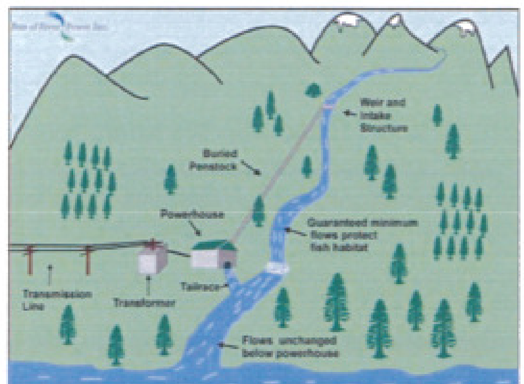
What is a "Run of the River" Project?

A "run-of-the-river" water power project utilizes available stream flows for renewable power generation and does not dam or store water.

"Run-of-the-river" projects utilize the natural kinetic energy of streams to produce electricity. Water is diverted into a high elevation intake and runs downhill through a penstock creating pressure, and then enters the powerhouse where the generator(s) is located. The water used to generate the electricity is released clean and cool back into the stream from which it was diverted. The key structural components of such a facility include:

- **An intake weir** -*at the upper extent of the Penstock,*
- **Penstock**- *a pipe which transfers the water to the powerhouse,*
- **Powerhouse** -*which generates the electricity, and*
- **Transmission** - *delivers the power generated to the public.*

The concept of a "run-of-the-river" hydro-electric generating facility and its components are illustrated below:



The exhibits shown on the next page illustrate the typical scale of infrastructure associated with the proposed Upper Pitt River projects.

What is 'Green' Energy?

In BC, our electricity is primarily generated from large scale hydro projects. Unlike fossil fuel derived electricity, generating 'green', renewable energy neither pollutes nor consumes or depletes natural resources. Wind and hydropower projects are examples of renewable energy. The difference between "run-of-the-river" projects and large scale hydro projects is that 'green' projects, such as those proposed by ROR, do not require dams for water storage, thereby eliminating the environmental impacts associated with dams.

Run of River Power Inc.
Northwest Cascade Power Ltd.

Newsletter Number One
November 2006

Brandywine Creek - Intake Weir

Brandywine Creek - Power House

Typical Transmission Line

The Review Process

The British Columbia Environmental Assessment Act (BCEAA) and related Opportunities for Public Consultation

The Upper Pitt River projects will be subject to a comprehensive environmental and socio-economic review under the BC Environmental Assessment Act (BCEAA). BCEAA harmonizes the federal and provincial environmental assessment requirements into a single process. The process is expected to take approximately 18 months to complete. Details on the project review process are available by visiting the Environmental Assessment Office website at www.eao.gov.bc.ca.

Meeting Stringent Environmental Standards

The BCEAA review will facilitate the resolution of environmental concerns related to the Upper Pitt River projects. The Environmental Assessment Office (EAO) will establish inter-agency advisory working groups consisting of provincial and federal agencies, local governments, First Nations and others as appropriate.

With the goal of obtaining a Project Certificate under BCEAA, ROR will concurrently work with the inter-agency advisory working groups to ensure the projects meet the stringent permitting and approval requirements of several key federal and provincial environmental acts and regulations.

Public Consultation Opportunities

BCEAA provides several opportunities for public, stakeholder and government input into the project review process. These include but are not limited to:

- Public Information Sessions
- First Nations Consultation
- Local Government Consultation
- EAO and the BCEAA process

BCEAA is a "'transparent" process. All project maps, reports and correspondence will be available for public viewing on the EAO Project Information web site at: www.eao.gov.bc.ca/epic

Only one of the projects has fish at the intake area. The powerhouse locations for all but one of the project sites have been established upstream of areas containing fish. The projects are located in tributaries of the Upper Pitt River and are not expected to have any negative effects on the Upper Pitt River stream flow or habitat.

Preliminary indications are that routine impact mitigation measures should ensure that fish and wildlife habitats will not be negatively affected by the projects.

The projects also lie within Crown lands that are actively managed for forest harvesting.

Run of River Power Inc.
Northwest Cascade Power Ltd.

Newsletter Number One
November 2006

Preliminary Study Findings
Economic, Environmental and Social

This newsletter summarizes preliminary findings of the field investigations and technical project studies ROR is currently undertaking to identify project issues and develop appropriate impact mitigation measures. Technical studies will continue throughout the duration of the BCEAA review process. ROR expects that the final technical studies will be competed in mid to late 2007.

Economic Benefits of the Upper Pitt River Projects

The Economic Benefits associated with the development of the Upper Pitt Lake Cluster have been assessed utilizing the British Columbia Input Output Model (BCIOM) that identifies benefits of construction projects on the provincial economy. The BCIOM model assesses direct and indirect benefits and effects associated with project development.

Based on the preliminary capital project cost estimated at $400 million dollars, the BCIOM was run and the following economic benefits have been identified:

- Employment
- GDP at a Factor Cost
- Local Tax Revenue
- Provincial Tax Revenue
- Federal Tax Revenue

The following jobs by sector of the provincial economy that will be created by the Upper Pitt River project are:

- Construction
- Manufacturing
- Retail Trades
- Professional , Scientific and Technical Services
- Accommodation and Food Services
- Other Industries
- Total jobs in man-years

Preliminary Environmental Findings

Technical studies of fish, wildlife, hydrology and natural resources have been ongoing since early 2006. Preliminary findings indicate that the Upper Pitt River is home to numerous fish and wildlife species that are typical of the region.

Six of the seven steep mountain streams do not have fish present in the diversion reaches due to their high elevations.

First Nations Involvement

The Upper Pitt River projects are primarily located within the traditional territory of the Katzie Nation. The transmission component of the project extends into the Squamish Nation territory. Other First Nations may have overlapping claims in the Upper Pitt River Project area. Consultations have been initiated with the First Nations and an Archeological Overview study has been completed.

Social / Community Issues
Recreational Values

The lack of road access limits recreational uses and opportunities in the Upper Pitt River project area. The primary commercial recreation facility is the Pitt River Lodge, which provides sport fishing, river rafting and hiking.

The development of the Upper Pitt River hydro-electric power cluster will require construction of a transmission line to connect the projects to the BC Hydro Grid. Two options are currently being assessed:

- **Northern Route - Links to the existing Cheekeye Sub Station in Squamish from the north** *which is the shorter of the two routes, avoids urban areas and appears to have significantly less potential for environmental impacts. This option requires a 4.3 km section of the transmission line traverse through Pinecone Burke Provincial Park.*
- **Southern Route - Extends south along the Pitt River Valley** *would run down the Pitt River Valley and be submerged through Pitt Lake and portions of Pitt River and travel through Pitt Meadows to connect to the BCTC transmission grid. This route entails construction in environmentally sensitive habitats.*

ROR is currently assessing the environmental, social, community and recreational impacts of both transmission options. Currently ROR is conducting a simultaneous impact assessment to address the requirements of BC Parks for a park boundary amendment. Additional meetings are being held with the following organizations and groups as part of the consultation activities:

- Fraser Valley Regional District
- Squamish Lillooet Regional District
- District of Pitt Meadows
- Squamish Recreational Group
- Pitt Lake Residential Homeowners
- Burke Mountain Recreational Group
- Squamish First Nation
- Katzie First Nation
- Tsleil-Waututh Nation (Burrard Band) Khaw
- Other

Run of River Power Inc.
Northwest Cascade Power Ltd.

Newsletter Number One
November 2006

How can you become involved?
ROR Public Consultation Process

Your comments and input regarding our Upper Pitt River projects is important to the project team. Your comments are appreciated and will be reviewed; we will attempt to improve project design based on your input, where technically feasible, economically viable and environmentally responsible.

As part of our Public Consultation program ROR will host two Public Information Sessions (Open Houses). We are also providing Public Comments Sheets to record public input. If you cannot attend a project information session you can provide input on our online Public Comments Sheet available on our web site at www.runofriverpower.com.

Contact Information

For more information pertaining to our company and the proposed Upper Pitt River project, please visit our web site at www.runofriverpower.com.

We encourage you to complete the online comment sheet so our project team can receive and consider your views and concerns.

If you have any questions regarding this newsletter, please contact the Run of River office at the 604-946-9232.

Initial Public Information Sessions

1. **Public Open House No. One:**
   Totem Hall, Squamish BC
   Date: Wednesday December 6, 2006
   Time: 4pm – 9pm
   Location: Totem Hall
   103 - 38551 Loggers Lane
   Squamish BC V8B 0B8
   Phone: (604) 689-3119

2. **Public Open House No. Two:**
   Pitt Meadows Public Library
   Date: Thursday December 7, 2006
   Time: 4pm - 9pm
   Location: Pitt Meadows Public Library
   12047 Harris Road,
   Pitt Meadows BC, V3Y 2B5
   Phone: 604-465-4113

Next Newsletter and Dates of Upcoming Open Houses to be Determined

TAB 7

ENVIRONMENTAL IMPACT STATEMENT

EXECUTIVE SUMMARY

Amended: July 19, 2013

SITE C | CLEAN ENERGY PROJECT

BC hydro

FOR GENERATIONS

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11. PROPONENT'S CONCLUSIONS

The purpose of the environmental assessment is to assess the potential residual adverse effects of the Project and determine whether each of those effects is significant when it is considered alone and when it is considered as a cumulative effect that is in combination with the residual effects of other projects and activities. This section of the Executive Summary includes the proponent's conclusions about the significance of potential residual adverse effects and cumulative effects of the Project.

SIGNIFICANCE OF POTENTIAL RESIDUAL EFFECTS

The conclusion of the substantial work undertaken to date indicates that the effects of the Project can largely be mitigated through careful project planning, comprehensive mitigation programs and ongoing monitoring during construction and operations. As a result, the Project is unlikely to result in a significant adverse effect on most of the VCs. However, a determination of significance has been made for the following VCs:

Fish and Fish Habitat

The transformation of a river ecosystem to a reservoir would create a new and productive aquatic ecosystem. This new aquatic ecosystem is expected to support a community of equal or greater productivity than the existing riverine environment. However, the composition of fish species would change. Overall, this would increase the productive capacity of fish and fish habitat in the reservoir. With this change, three distinct sub-groups of species, the migratory Arctic grayling in the Moberly River, the migratory bull trout that spawn in the Halfway River and mountain whitefish that rely on Peace River habitat, may be lost. However, these species would continue to be present in Peace River tributaries and downstream of the Site C dam, and may persist in the reservoir. As a result of the potential loss of these distinct sub-groups of fish, a finding of significance has been made.

Wildlife Resources

Habitat for certain migratory birds (Canada, Cape May and Bay-breasted Warblers, Yellow Rail and Nelson's Sparrow) would be affected by the creation of the reservoir. Because these select migratory birds are considered species at risk, a determination of significance has been made. None of the other species of wildlife assessed are expected to be significantly affected by the Project as proposed mitigation would be effective or the populations are not at risk.

Vegetation and Ecological Communities

The creation of the reservoir and other Project activities would alter and fragment some unique terrestrial ecosystems that include a marl fen, tufa seeps, and old and mature riparian and floodplain forests. In addition, some occurrences of rare vascular and non- (9)
vascular plants would be lost.

As a result of potential alteration and fragmentation of unique terrestrial ecosystems and loss of rare plant species, a determination (10)
of significance has been made.

Current Use of Lands and Resources for Traditional Purposes

The creation of the reservoir would result in the loss of some important multi-use, cultural areas and valued landscapes, including sites at Attachie, Bear Flats and Farrell Creek. As a result, a determination of significance has been made for the effect on the use of these areas by members of the Treaty 8 Tribal Association, Saulteau First Nations and Blueberry River First Nations. In addition, the effect on (11)
other cultural and traditional uses would be significant for McLeod Lake Indian Band at the confluence of the Peace River with the Halfway River. The effect on hunting, trapping and fishing opportunities and practices would not be significant.

BC Hydro will continue to explore additional potential mitigation opportunities for these specific VCs.

SIGNIFICANCE OF POTENTIAL CUMULATIVE EFFECTS

The EIS provides an assessment of the cumulative effects that may result from the Project in combination with other projects or activities that have been, or will be carried out. The assessment was conducted to determine whether potential residual adverse effects of the Project on a VC would have a spatial and temporal overlap with the potential residual effects of another project or activity conducted within the Regional Assessment Area (RAA) on the same VC.

In order to conduct the assessment of the potential cumulative effects of the Project on a VC, three cases were developed: a baseline case, a future case without the Project, and a future case with the Project. The first two cases were used to demonstrate the status of the VC taking into account the effects of projects and activities that have been and will be carried out. The case with the Project was then used to determine the extent to which those effects would combine with the potential residual adverse effects of the Project. In consideration of possible regional approaches to mitigation, the potential residual cumulative effects of the Project were then assessed and the significance determined.

The future cases were developed taking into account registered and active projects on the BCEAO and CEA Agency websites, and projects and activities identified by reviewing registered oil and gas applications, registered water license applications, Land Act tenure applications, harvest plans, official community plans and large waste discharges into the Peace River from Peace Canyon Dam to Vermillion Chutes, Alberta. All of those projects and activities have been included on the "Project Inclusion List".

The anticipated residual effects to Vegetation and Ecological Communities from other future projects and activities combined are considered significant, even without the Project. This is because the potential residual effects of other projects and activities that include road construction, forestry and land clearing activities, cannot be fully mitigated and the future loss of rare plants and rare and sensitive ecosystems due to these other projects have the potential to further elevate provincial or federal listings. The cumulative effect with the Project is also considered significant.

The anticipated residual effects to Wildlife Resources from other future projects and activities combined are considered significant, even without the Project. The footprints of other projects and activities within the regional assessment area would result in the loss and fragmentation of habitat for wildlife. The Project would potentially result in the alteration and fragmentation of habitat, disturbance or displacement, and mortality for certain key indicator species or species groups. The cumulative effect with the Project is also considered significant.

Increasing GHG emissions from the many sources globally and the resulting increase in GHG concentrations in the atmosphere, and the consequent changes to the global climate, are currently believed to be a significant cumulative environmental effect, even without the Project. While the Project's contribution to a net change in global GHG emissions is relatively small and the environmental effect of the Project related GHG emissions on global climate is not measurable, the cumulative effect with the Project is also considered significant.

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TAB 5

SITE C | CLEAN ENERGY PROJECT

January 2013

INFORMATION SHEET

COST ESTIMATE FOR SITE C

In 2011, the cost estimate for the Site C Clean Energy Project was updated to reflect the upgraded project design, and current market prices for labour, equipment and materials.

Site C would have an estimated capital cost of $7.9 billion (a detailed cost breakdown is shown on the following page). It would produce electricity at a cost between $87 and $95 per megawatt hour at the point of interconnection, based on a real discount rate from 5.5 to 6 per cent. This would make Site C among the most cost-effective resource options to help meet B.C.'s future electricity needs.

Like other large hydro projects, Site C would have an upfront capital cost, followed by low operating costs and a long life of more than 100 years.

Site C and BC Hydro Rates

There is no effect on today's BC Hydro rates from Site C, as costs are deferred until the project begins generating electricity. This ensures that the costs for Site C are paid by the ratepayers who are benefiting from the project.

BC Hydro is committed to keeping rates competitive. To reduce the rate impact on customers, BC Hydro anticipates that the costs for Site C would be amortized over a long period. This amortization period and rate impact would be determined through a future regulatory process with the British Columbia Utilities Commission.

Economic Development

Site C is estimated to create approximately 10,000 direct jobs during construction, and approximately 33,000 total jobs through all stages of development and construction. It is estimated that the construction of Site C would contribute $3.2 billion to provincial gross domestic product. The project would provide significant business opportunities for small, medium and large businesses, including northern and Aboriginal businesses.

Once in operation, Site C would contribute revenues to the local and provincial governments through water rentals, grants-in-lieu and other taxes, in addition to providing benefits to Peace region communities and First Nations, where appropriate.

GOVERNMENT REVIEW OF BC HYDRO

In June 2011, a report by a government-appointed panel concluded that: "Site C is a reasonable cost alternative to meet load growth."

The panel noted that: "Site C is seen as cost effective, as the cost of energy, at $87-95 per MWh, compares favourably with other benchmarks for clean energy."

The report is available at: www.newsroom.gov.bc.ca/downloads/bchydroreview.pdf.

- more -

PROJECT COST BREAKDOWN

Site C has an estimated capital cost of $7.9 billion, and it would have low operating costs over its lifespan of more than 100 years. The breakdown of the project cost estimate is below.

PROJECT COST ESTIMATE BREAKDOWN	Cost Estimate *$millions*
Dam and Associated Structures	$ 1,790
Earthfill Dam	
Approach Channels and RCC Buttress	
Spillway, Intakes and Penstock	
Left (North) Bank Stabilization	
Cofferdams, Dikes and Diversion Tunnels	
Power Facilities	$ 990
Powerhouse and Switchgear Building	
Stations and Transmission	
Offsite Works	$ 530
Highway 29 Relocation, Access Roads, Clearing, Land and Rights	
Construction Management and Services	$ 515
Worker Accommodation	
Construction Management and Construction Services	
Total Direct Construction Costs	**$ 3,825**
Indirect Costs	$ 1,005
Development Costs	
Regulatory Costs	
Construction Insurance	
Project Management and Engineering	
Mitigation and Compensation	
Contingency (18% on direct costs, 10% on indirect costs)	$ 730
Total Construction and Development Costs (real dollars)	**$ 5,560**
Inflation	$ 790
Interest During Construction	$ 1,550
Total Construction and Development Costs (nominal dollars)	**$ 7,900**

A preliminary forecast of anticipated operating costs for the planning life of the project is below.

ANNUAL OPERATING COSTS	Cost Estimate *F2011 millions**
Water Rentals	$ 40.2
Grants-in-Lieu and School Taxes	$ 2.6
Operations and Maintenance Costs	$ 7.5
Annualized Sustaining Capital	$ 9.3

** Levelized cost per year*

Site C requires environmental certification and other regulatory permits and approvals before it can proceed to construction. In addition, the Crown has a duty to consult and, where appropriate, accommodate Aboriginal groups.

More information on Site C can be found at: www.bchydro.com/sitec.

PO Box 2218
Vancouver BC V6B 3W2
Toll-free: 1 877 217 0777

Community Consultation Office
9948 100th Avenue
Fort St. John BC V1J 1Y5
Tel: 250 785 3420

Email: sitec@bchydro.com
bchydro.com/sitec

BC hydro
FOR GENERATIONS

TAB 6

Minutes of the **COUNCIL IN COMMITTEE MEETING** of Pitt Meadows City Council held on **February 27, 2007** at 3:00 p.m. in the Meadows Room of the Pitt Meadows City Hall, 12007 Harris Road, Pitt Meadows, British Columbia.

PRESENT:

Elected Officials:	Mayor D.F. MacLean Councillor J. Becker Councillor D. Bing Councillor D. Eisel, Chair Councillor J. Elkerton Councillor D. Walters
Staff	J. Rudolph, Chief Administrative Officer D. Rear, Director of Corporate Services K. Grout, Director of Operations and Development Services L. Darcus, Director of Legislative Services L. Elchuk, Bylaw and Licensing Officer L. Kelly, Executive Assistant
ABSENT:	Councillor A. Tolchard

The meeting was called to order at 3:01 p.m.

A. ADOPTION OF AGENDA

MOVED by Councillor Walters, **SECONDED** by Councillor Bing, THAT the agenda for the February 27, 2007 Council in Committee Meeting be amended by deleting Item C.2 – Introduction of Ridge Meadows RCMP Members to City Council; AND THAT the minutes be adopted as amended.

CARRIED.

B. ADOPTION OF MINUTES

1. **Minutes of the February 13, 2007 Council in Committee Meeting.**

MOVED by Councillor Becker, **SECONDED** by Councillor Walters, THAT the Minutes of the Council in Committee Meeting held on February 13, 2007, be adopted.

CARRIED.

C. DELEGATIONS AND PRESENTATIONS

1. Introduction to Proposed Hydro Power Project.

Jako Krushniski, President and CEO, and Russ Tyson, Public Consultation, Run of River Power Inc., provided a Powerpoint presentation which is included as Attachment 1 and forms part of these minutes. Newsletter Number One dated November 2006 is included as Attachment 2 and forms part of these minutes.

Mr. Krushniski and Mr. Tyson discussed the proposed development of seven small hydro-electric power projects to be located in the Upper Pitt River. The projects would be connected to the BC Hydro Grid by one of two routes, either north to Squamish or south along the Pitt River Valley to the Coast Meridian substation. They also discussed the review process, the agencies involved in the process, and the economic, environmental and community and recreational effects of the project.

It was noted that a public information session was held at the Pitt Meadows Library on December 7, 2006 and a second one is planned for early April. Input from the public is welcome and their website is www.runofriverpower.com.

Council asked that future Newsletters be sent to the City and that staff be kept informed of the progress, including additional public information sessions, as Run of the River Power Inc. work their way through the review process.

(J. Krushniski and R. Tyson left the meeting at 3:37 p.m.)

D. REPORTS

1. Youth and Justice Advocacy – Fee for Service Agreement. (1850-2 [2007])

The Director of Corporate Services explained the background to the fee for service agreement proposal with Youth and Justice Advocacy, noting an increase in funding due to the impact of rent at their new premises. Mr. Rear said the basic elements of the agreement are: (1) regular annual funding adjusted by inflation; (2) provision of annual activity and financial information to Council; and (3) a liaison to the Board.

There was some discussion as to whether this was appropriate use of taxpayers' money, and whether it constituted downloading by other levels of government.

1. **Youth and Justice Advocacy – Fee for Service Agreement Cont'd. (1850-2 [2007])**

MOVED by Mayor MacLean, **SECONDED** by Councillor Bing, THAT the Committee recommends THAT Council:

A. Approve the fee for service agreement for the Ridge Meadows Youth and Justice Advocacy Association, as attached to the report by the Director of Corporate Services dated February 22, 2007; and direct the Mayor and Corporate Officer to sign the agreement on behalf of the City; and

B. Direct staff to arrange for a presentation at a future Council Meeting by the Ridge Meadows Youth and Justice Advocacy Association.

CARRIED.

With Councillor Becker voting in the negative.

2. **Development Permit No. 2006-002 Amendment - Sawyer's Landing Osprey Commercial Lot 9. (3060-20-2007-03-P)**

The two issues under consideration were a change in materials for the parapet of the brick building and removal of the third set of windows and canopy from the south elevation.

Staff was directed to bring forward alternate solutions for the south elevation for consideration at the March 6, 2007 Regular Council Meeting,

MOVED by Councillor Walters, **SECONDED** by Councillor Bing, THAT the Committee recommends THAT Council, authorize the amendment to Development Permit No. 2006-002.

CARRIED.

3. **Development Variance Permit Application for Three Lot Subdivision at 189A Street and 122B Avenue – Development Variance Permit No. 2007-002. (3090-20-2007-01-P)**

MOVED by Mayor MacLean, **SECONDED** by Councillor Elkerton, THAT the Committee recommends THAT council authorize staff to notify qualifying property owners that Development Variance Permit No. 2007-002 will be considered by Council at the March 20, 2007 Regular Meeting of Council.

CARRIED.

4. Section 57 Notice – Building Bylaw No. 2131, 2003. (4020-01)

MOVED by Councillor Elkerton, **SECONDED** by Councillor Walters, THAT the Committee recommends THAT Council direct the Director of Legislative Services to file a notice in the Land Titles Office against the title of the following property, in accordance with Section 57 of the *Community Charter*: 19226 Hammond Road.

CARRIED.

5. Section 57 Notice – Building Bylaw No. 2131, 2003. (4020-01)

MOVED by Councillor Elkerton, **SECONDED** by Councillor Walters, THAT the Committee recommends THAT Council direct the Director of Legislative Services to file a notice in the Land Titles Office against the title of the following property, in accordance with Section 57 of the *Community Charter*: 11719 – 192A Street.

CARRIED.

6. Section 57 Notice – Building Bylaw No. 2131, 2003. (4020-01)

MOVED by Councillor Elkerton, **SECONDED** by Councillor Walters, THAT the Committee recommends THAT Council direct the Director of Legislative Services to file a notice in the Land Titles Office against the title of the following property, in accordance with Section 57 of the *Community Charter*: 11985 – 189B Street.

CARRIED.

(L. Elchuk left the meeting at 4:10 p.m.)

7. Council Round Table.

Following a discussion on meeting times and processes, staff was directed to prepare a report, including an updated Procedure Bylaw, for consideration by Council at a future Council in Committee Meeting. It was agreed that attachments to Minutes no longer need to be included in the Agenda packages.

E. ADJOURNMENT

MOVED by Mayor MacLean, **SECONDED** by Councillor Eisel, THAT this meeting now be adjourned at 4:45 p.m.

CARRIED.

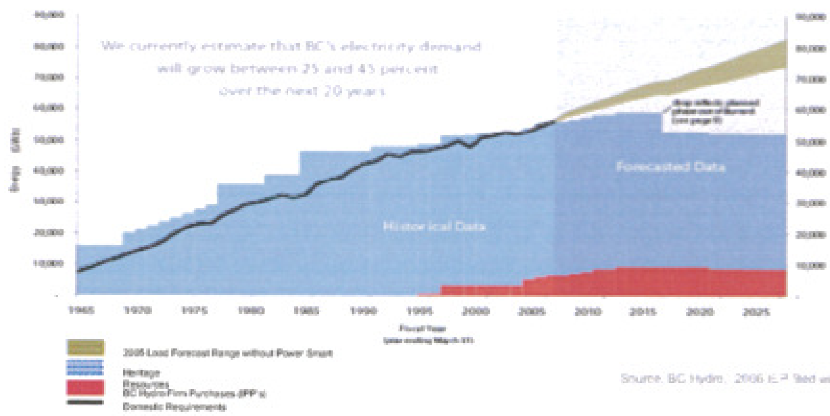
____
Chairman

#32271v1

ATTACHMENT 1:

SHORTAGE OF POWER IN BC

BC Hydro committed to 50% of new load from clean energy sources



Source: BC Hydro, 2006 IEP filed with BCUC

BC's Electricity Gap

Run of River Power Inc.

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BC HYDRO OUTLOOK

BC imported 15% of its domestic power requirement in 2006

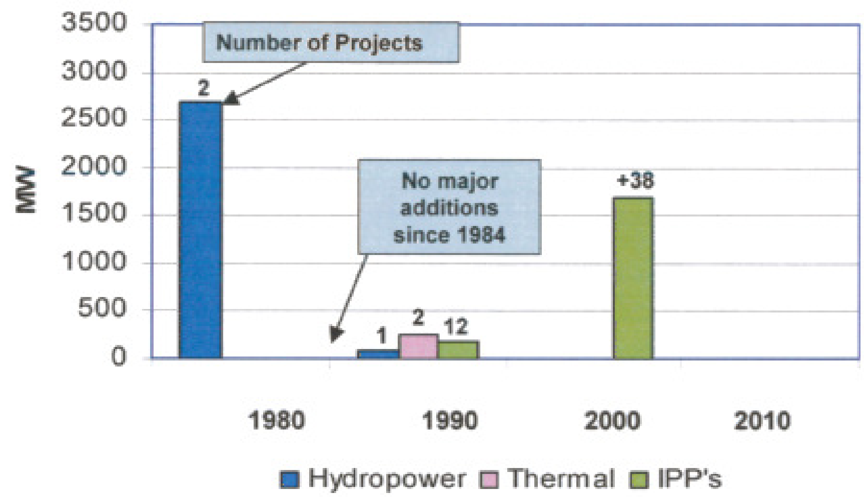
45% of BC's energy could be imported over the next twenty years

The Provincial Government and BC Hydro have identified independent power projects as a key part of the solution to this energy gap

BC Hydro's integrated electricity plan calls for 50% of new energy acquisitions to come from renewable sources

Run of River Power Inc.

BC HYDRO CAPACITY



Run of River Power Inc.

OUR COMMITMENT

Run of River Power Inc. is dedicated to developing green sustainable energy for all British Columbians

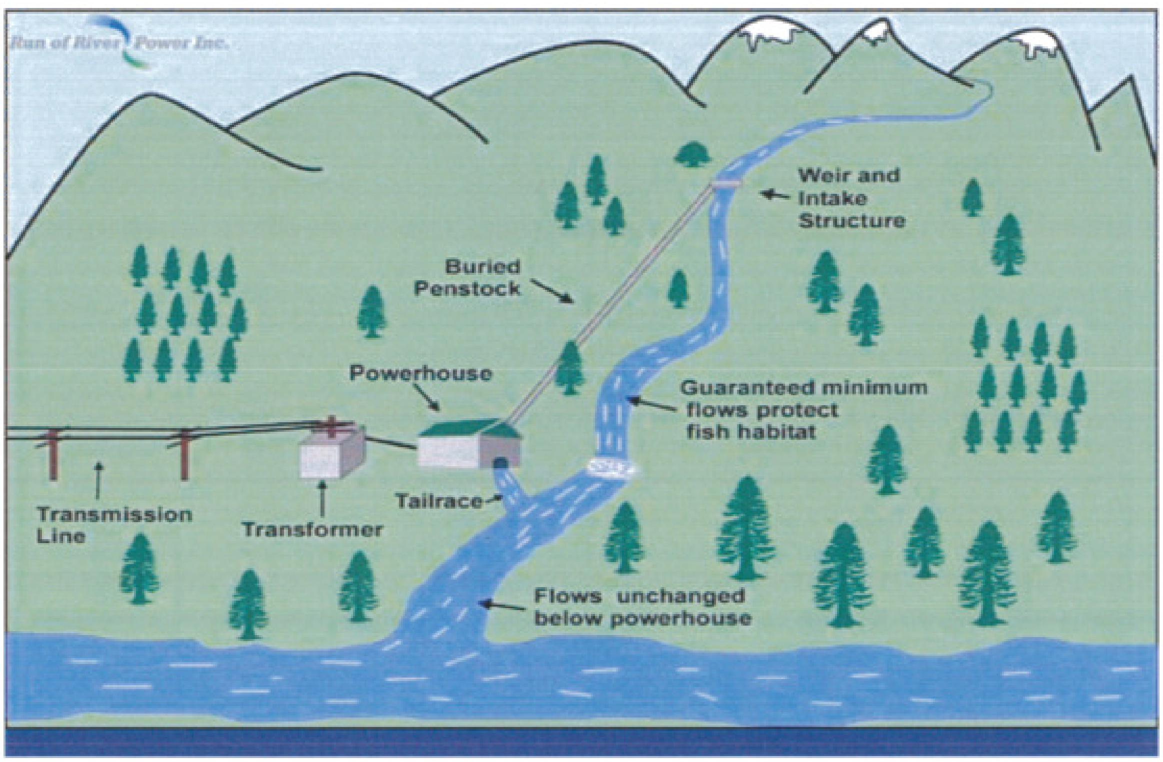
7.6 MW Brandywine Creek hydro-electric power project is certified to display the "EcoLogo" brand

- Is a registered trademark of Environment Canada

Proposes the development of seven small 'green' hydro-electric power projects in the Fraser Valley Regional District

- Proposed Upper Pitt River projects will provide electricity to over 55,000 homes

Run of River Power Inc.



What is a "Run-of-the-River" Project?

Run of River Power Inc.

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Brandywine Creek - Fish Friendly Intake Weir

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Brandywine Creek - Powerhouse

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Brandywine Creek – Generators

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Typical Transmission Line

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Project Location – Regional Context

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Bucklin Creek - 35.0 MW Capacity

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Pine Cone - 23.0 MW Capacity

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Shale Creek - 16.0 MW Capacity

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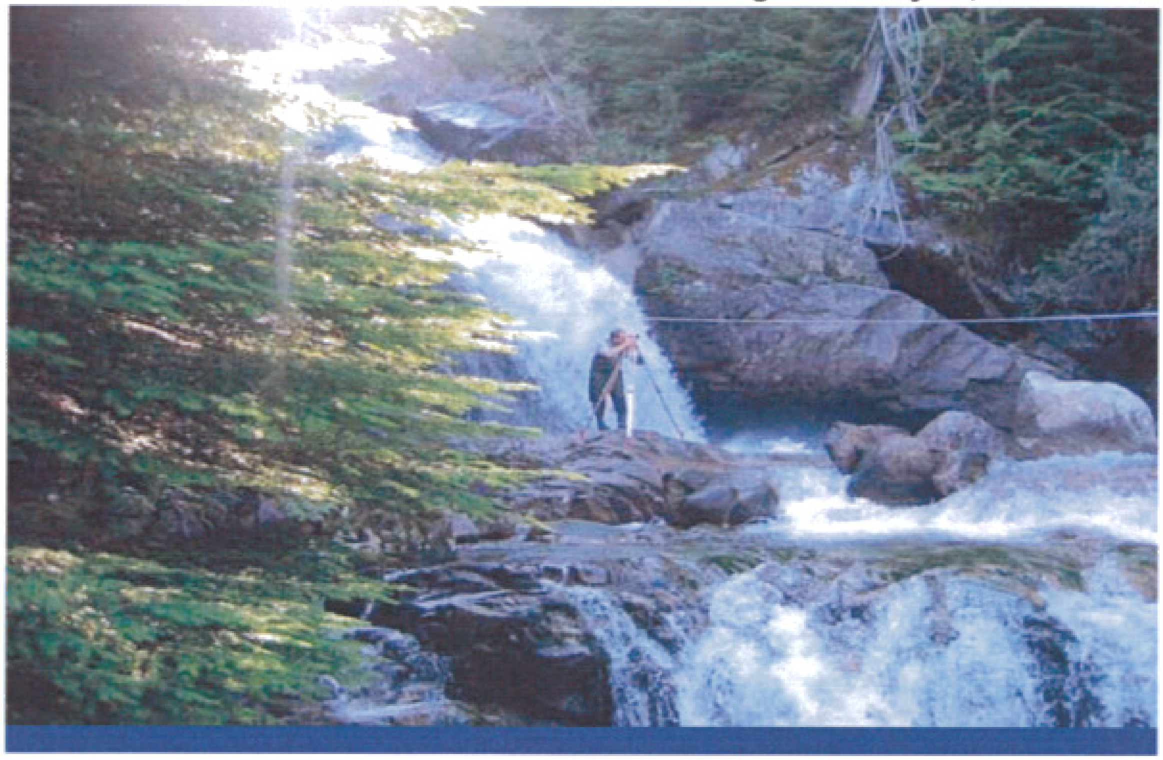
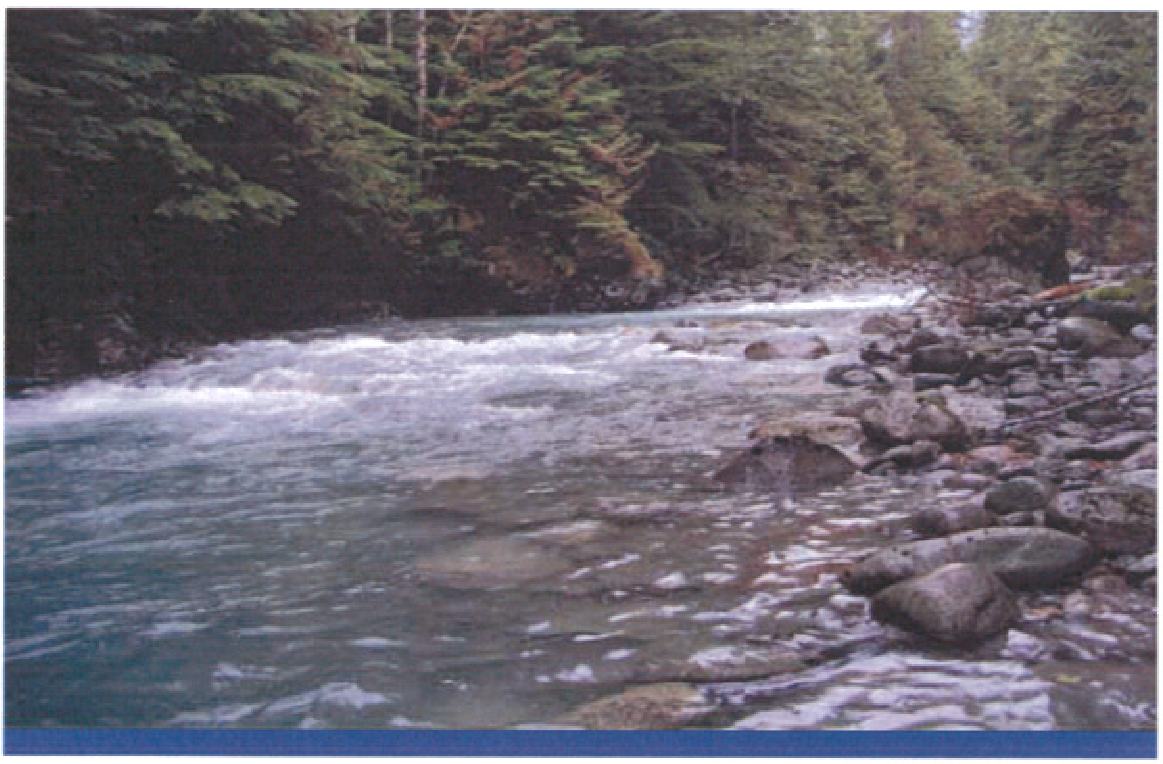


Steve Creek - 16.0 MW Capacity

Run of River Power Inc.



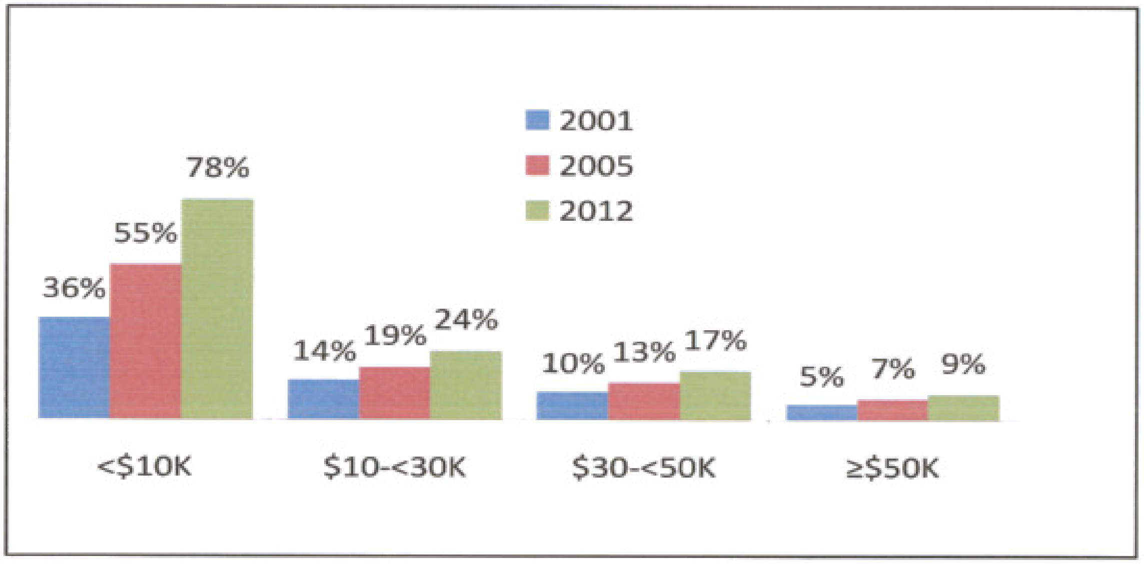
Corbold Creek - 15.0 MW Capacity

Run of River Power Inc.

TAB 3

AMERICAN COALITION FOR CLEAN COAL ELECTRICITY

Energy Cost Impacts on American Families, 2001-2012



Energy Costs as Percentage of Annual Household After-Tax Income

February 2012

www.americaspower.org

Summary of Findings

This report analyzes consumer energy cost increases since 2001 for all U.S. households and examines the pattern of energy expenditures among four income levels and for senior and minority families in 2012. It relies on historical energy consumption survey data and current energy price forecasts from the U.S. Department of Energy's Energy Information Administration (EIA).[1] Energy costs are summarized in nominal (then-current) dollars by household income category for U.S. households in 2001, 2005, and 2012, using data from EIA and the U.S. Bureau of the Census.[2] Energy price projections for 2012 are based on the DOE/EIA Short-Term Energy Outlook released in January 2012.

Energy expenditures as a percentage of nominal after-tax income are estimated after the effects of federal and state income taxes and federal social insurance payments. The 2012 projections in this report are based on U.S. Bureau of the Census household income data for 2010 (the most recent available) and projected energy prices for 2012.

Key findings of this report are:

- In 2010, the median household income of U.S. families was $49,445. Slightly more than one-half of U.S. households have average pre-tax annual incomes below $50,000. In 2001, families with gross annual incomes below $50,000 spent an average of 12% of their average after-tax income of $21,834 on residential and transportation energy. By 2005, energy costs rose to 16% of their average after-tax income of $22,682. In 2012, these households are projected to spend 21% of their average after-tax income of $22,390 on energy.

- Family incomes have not kept pace with the rising costs of energy. Since 2007, the U.S. Census Bureau reports that real (inflation-adjusted) median household income has declined by 6% (from $52,823) and is 7% below the median household income peak ($53,252) that occurred in 1999.

- Poverty rates have increased to historic highs along with the declining long-term trend in family incomes. The number of people in poverty in 2010 was the largest number in the 52 years since the Census Bureau began to publish poverty statistics. Poverty is more prevalent among some minority groups. Some 27% of Blacks and 26% of Hispanics lived in poverty in 2010, compared with 15% for the overall population.

- Higher gasoline prices account for nearly four-fifths of the increased cost of energy for consumers since 2001. In nominal dollars, average U.S. household expenditures for gasoline will grow by 136% from 2001 to 2012, based on EIA gasoline price projections for 2012. In comparison, residential energy costs for heating, cooling, and other household energy services will increase on average by 43%, from $1,493 in 2001 to a projected $2,131 per household in 2012.

- Electricity is the bargain among all consumer energy products. Among consumer energy goods and services, electricity has maintained relatively lower annual average price increases compared to residential natural gas and gasoline. Electricity prices have increased by 51% in nominal dollars since 1990, well below the 72% rate of inflation in the Consumer Price Index. The nominal prices of residential natural gas and gasoline have nearly doubled and tripled, respectively, over this period.

- Virtually all of the residential electricity price increases over the past two decades have occurred since 2000. These increases are due in part to additional capital, operating and maintenance costs associated with meeting clean air and other environmental standards.

- Lower-income families are more vulnerable to energy costs than higher-income families because energy represents a larger portion of their household budgets. Energy is consuming one-fifth or more of the household incomes of lower- and middle-income families, reducing the amount of income that can be spent on food, housing, health care, and other necessities.

- In 2010, 62% of Hispanic households and 68% of Black households had average annual incomes below $50,000, compared with 46% of white households and 39% of Asian households. Due to these income inequalities, the burdens of energy price increases are imposed disproportionately on Black and Hispanic households.

- Fixed-income seniors are a growing proportion of the U.S. population, and are among the most vulnerable to energy cost increases due to their relatively low average incomes. In 2010, the median gross income of 25.4 million households with a principal householder aged 65 or older was $31,408, 36% below the national median household income.

Energy Costs for U.S. Families, 2001–2012

Energy costs for residential utilities and gasoline continue to strain low- and middle-income family budgets. As Table 1 illustrates, the average American family with an after-tax income of $53,229 will spend an estimated $6,088 on energy in 2012, or 11% of the family budget. The 60 million households earning less than $50,000—representing 50.4% of U.S. households—will devote an estimated 21% of their after-tax incomes to energy, compared with 9% for households with annual incomes above $50,000. For the 28 million lower-income families with incomes between $10,000 and $30,000, energy expenditures will consume 24% of average after-tax incomes, compared with 14% in 2001.

The summary income and energy expenditure data in Table 1 are based on U.S. Bureau of the Census pre-tax household income data for 2010 (the most recent available) and energy prices for 2012 projected by DOE/EIA. The Congressional Budget Office has calculated effective total federal tax rates, including individual income taxes and payments for Social Security and other social welfare programs.[3] State income taxes are estimated from current state income tax rates.

Table 1. Estimated Household Energy Expenditures as a Percentage of Income, 2012

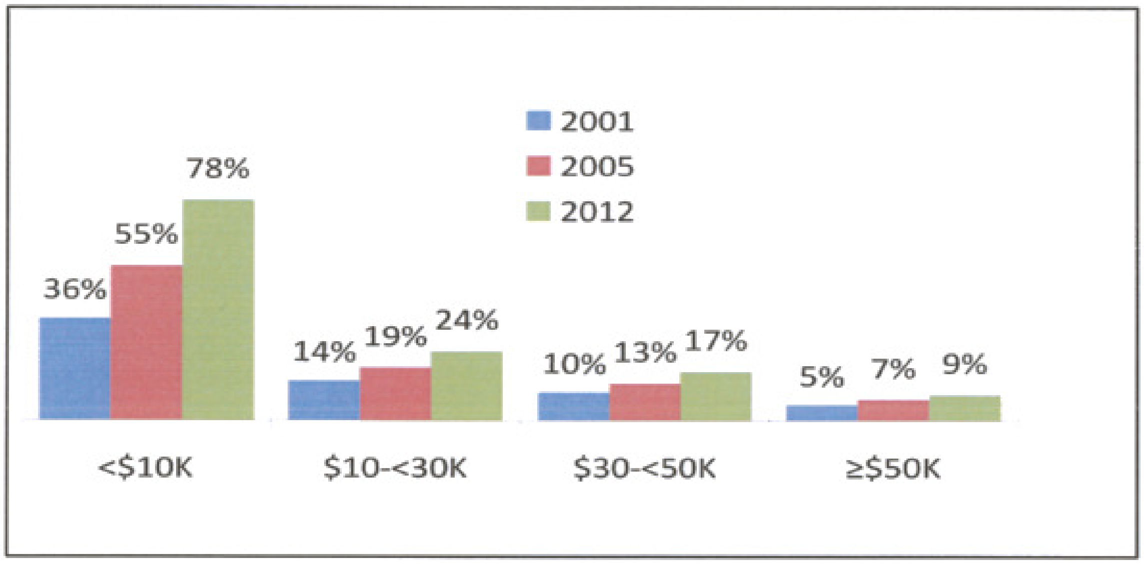
Pre-tax income	<$10K	$10-<$30K	$30-<$50K	<$50K	≥$50K	Average
Est. average after-tax income	$4,764	$18,106	$33,541	$22,390	$84,263	$53,229
Percentage of households	7.8%	23.6%	19.0%	50.4%	49.6%	100.0%
Residential energy	$1,596	$1,773	$2,044	$1,848	$2,554	$2,131
Transportation fuel	$2,106	$2,621	$3,705	$2,951	$4,953	$3,957
Total energy	$3,702	$4,394	$5,749	$4,799	$7,507	$6,088
Energy pct. of after-tax income	77.7%	24.3%	17.1%	21.4%	8.9%	11.4%

Source: Appendix Table 1.

Many lower-income families qualify for federal or state energy assistance. However, these programs are hard-pressed to keep up with the increase in household energy costs. In FY2011, funding for the federal Low Income Home Energy Assistance Program (LIHEAP) was cut from $5.1 billion to $4.7 billion.[4] Based on DOE/EIA's 2005 Residential Energy Consumption Survey (2009), the $4.7 billion funding level for LIHEAP would offset less than 2% of total U.S. residential energy bills.

The portion of household incomes devoted to energy has increased substantially since 2001 (see Chart 1). In 2001, 62 million families with gross annual incomes less than $50,000 (2001$) spent an average of 12% of their after-tax income on residential and transportation energy. In 2012, energy will account for an average of 21% of the after-tax income of the 60 million American families in this income category. Energy cost burdens are greatest on the poorest families, those earning less than $10,000. Their average energy bills increased from 36% of estimated after-tax income in 2001 to 78% in 2012. These estimates do not account for any governmental energy assistance that these families may receive, and thus do not reflect actual personal energy consumption expenditures.

Chart 1
Energy Costs as Percentage of Nominal After-Tax Income, 2001, 2005, and Projected 2012

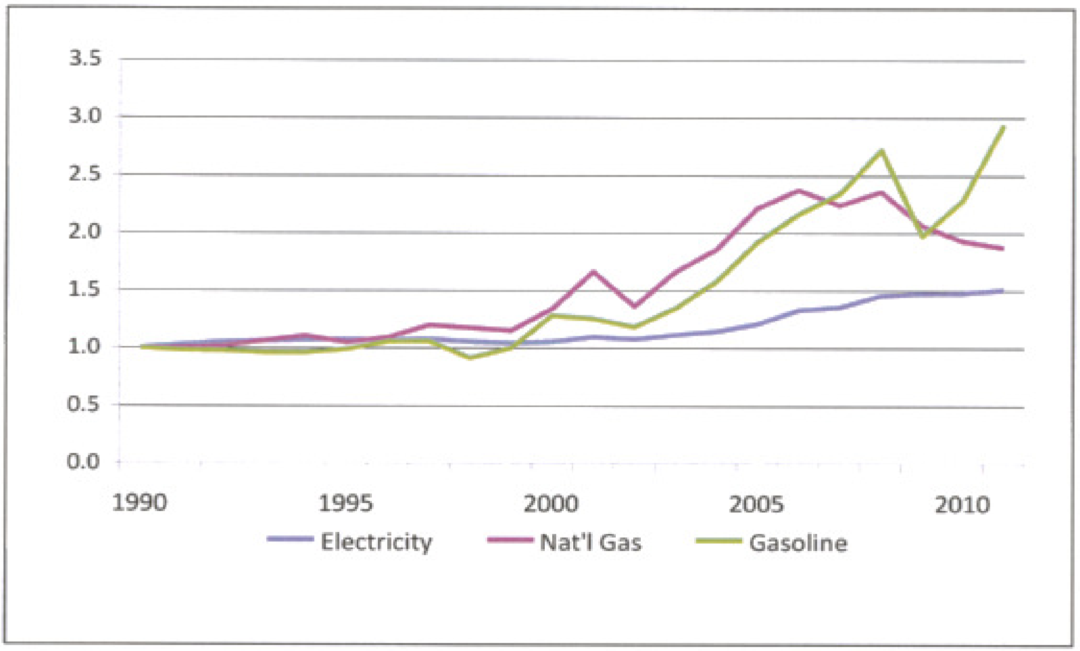


Source: Appendix Table 1.

Relative Energy Price Increases

Among key consumer energy products, electricity has increased at the lowest rate measured in nominal dollars over the past two decades. Chart 2 provides an index of consumer energy prices in nominal dollars since 1990. Prices for residential natural gas and gasoline have nearly doubled and tripled, respectively, while residential electricity prices increased by 51%, well below the 72% rate of inflation based on the Consumer Price Index between 1990 and 2011.[5]

Chart 2
Price Trends of Consumer Energy Products in Nominal Dollars, 1990-2012
(Index 1990 = 1.0)



Sources: U.S. DOE/EIA, Annual Energy Review 2010 and Short-Term Energy Outlook (January 2012).

Unlike other consumer energy products, electricity has maintained a relatively low rate of price increase below the overall rate of inflation. However, as Chart 2 indicates, virtually all of the residential electricity price increases over the past two decades have occurred since 2000. These increases are due in part to additional capital, operating and maintenance costs associated with meeting clean air and other environmental standards.[6]

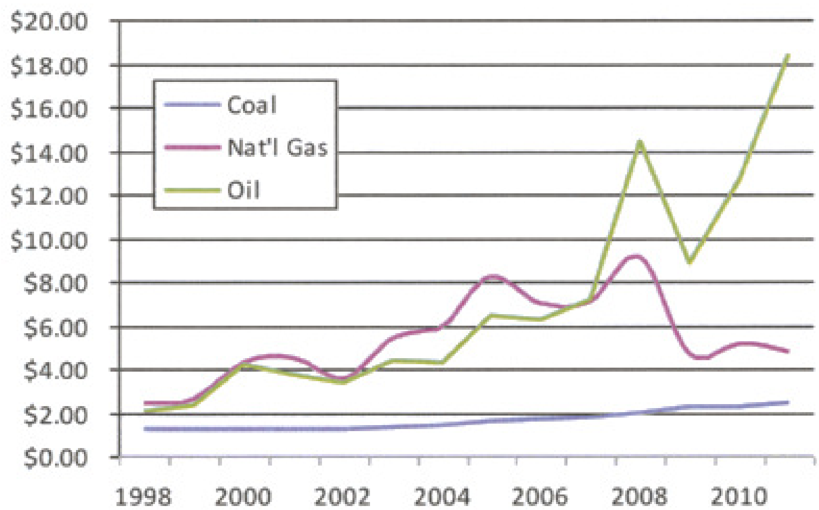
Current and prospective EPA rules for the utility sector are expected to result in additional electricity price increases in many areas of the country. For example, U.S. EPA estimates the annual costs of compliance with one recent Clean Air Act regulation – the utility Mercury and Air Toxics Standards rule – at $9.6 billion ($2007) in 2016.[7] The projected annual cost of this rule is 45% greater than EPA's $6.6 billion ($2006) estimate of the costs of compliance with all utility Clean Air Act requirements in 2010.[8]

Electric Utility Fuel Cost Trends

The relatively modest long-term rate of price increase for residential electricity reflects, in part, the electric utility industry's historic reliance on low-cost coal for roughly one-half of its energy supplies. As shown in Chart 3, coal prices delivered to electric utilities over the past decade have remained low and stable relative to competing fuels such as natural gas and petroleum.[9]

EIA forecasts that domestic coal will cost $2.40 per million British Thermal Units (MMBTU) delivered to power plants in 2012.[10] EIA projects the cost of natural gas delivered to utility plants in 2012 at $4.23/MMBTU.[11] In its most recent long-term projections, EIA forecasts that natural gas wellhead prices will remain below $5 per thousand cubic feet (mcf) in 2010$ through 2023, assuming continued success in the development of shale gas reserves.[12] EIA estimates that natural gas wellhead prices will reach $6.52 (in 2010$) per mcf (or $6.72/MMBTU) in 2035.[13] Minemouth coal prices are projected to increase from $1.76 per MMBTU in 2010 to $2.51 per MMBTU in 2035 (2010$).[14]

Chart 3
Electric Utility Fuel Costs, 1998-2012
(Nominal $ per Million BTU)



Sources: U.S. DOE/EIA, Electric Power Annual (2010) and Short-Term Energy Outlook (January 2012).

Consumer Energy Cost Estimates

The distribution of U.S. households by income categories provides the basis for estimating the effects of energy prices on consumer budgets in 2012. EIA's 2001 and 2005 Surveys of Residential Energy Consumption[15] are the principal sources for estimating energy expenditures for residential heating, cooling, electricity, and other household energy services. For this report, the EIA 2005 survey is updated with Census Bureau 2010 population data and EIA's January 2012 forecast of 2012 residential energy prices.

EIA's 2001 Survey of Household Vehicles Energy Use[16] provides information for estimating transportation energy costs by household income category based on gallons of gasoline used per household. These transportation data are updated using Census Bureau 2010 population data and EIA's January 2012 national average retail gasoline price estimate for 2012 of $3.54 per gallon.

It is assumed that household gasoline usage in 2012 will be 6.3% below the levels of the 2001 survey, reflecting a decline in household vehicle-miles traveled. The Department of Transportation's 2009 National Highway Transportation Survey (NHTS) reports that average vehicle miles traveled per household declined from 21,187 miles in 2001 to 19,850 miles in 2009.[17] No adjustment is made for improved mileage performance because fleet average fuel efficiency has been flat at approximately 25 MPG since 1990.[18] The 2009 NHTS does not provide data on transportation expenses by income category, but its aggregate estimate of household gasoline expenditures for 2009 is consistent with the findings of this report.[19]

Residential and Transportation Energy Expenses

The principal residential energy expenses are for electricity and natural gas for heating, cooling, lighting, and appliances. Some homes also use propane fuel and other heating sources, such as home heating oil, kerosene, and wood.

Gasoline accounts for the largest single increase in consumer energy costs over the past decade. EIA's Short-Term Energy Outlook projects 2012 average retail gasoline costs at $3.54 per gallon, more than double the $1.47 per gallon price in 2001. In 2012, the average U.S. family will spend an estimated $3,957 on gasoline, compared with $1,680 in 2001 – an average increase of $2,277 per household.

The increase in gasoline prices follows a decade-long trend of increased market shares of pickup trucks and sport utility vehicles (SUVs), and an increase in the average number of vehicles owned per household.[20] Despite the success of the "Cash for Clunkers" program, many families continue to own low-efficiency vehicles with low trade-in values.

The impacts of residential and transportation energy costs on low- and middle-income families are summarized in Table 2 and in Appendix Table 1. Residential energy costs have increased on average by 43% since 2001, from $1,493 to $2,131 per household. Consumer costs for gasoline grew by 136% during this period, accounting for 79% of the overall $2,870 increase in total household energy costs since 2001.

Table 2. Estimated After-Tax Income and Energy Costs by Income Category, 2001, 2005, and Projected 2012
(In nominal dollars)

Pre-tax annual income:	<$10K	$10-<$30K	$30-<$50K	<$50K	≥$50K	Totals
Est. avg. after-tax income						
2001	$5,532	$17,520	$32,380	$21,834	$76,054	$47,396
2005	$5,249	$18,198	$33,716	$22,682	$81,066	$49,924
2012	$4,764	$18,106	$33,541	$22,390	$84,263	$53,229
Residential energy $						
2001	$1,039	$1,260	$1,456	$1,299	$1,836	$1,493
2005	$1,351	$1498	$1,733	$1,565	$2,173	$1,850
2012	$1,596	$1,773	$2,044	$1,848	$2,554	$2,131
Transport energy $						
2001	$934	$1,160	$1,638	$1,306	$2,195	$1,680
2005	$1,513	$1,878	$2,652	$2,119	$3,554	$2,790
2012	$2,106	$2,621	$3,705	$2,951	$4,953	$3,957
Total energy $						
2001	$1,973	$2,420	$3,094	$2,605	$4,031	$3,218
2005	$2,863	$3,375	$4,385	$3,684	$5,725	$4,640
2012	$3,702	$4,394	$5,749	$4,799	$7,507	$6,088

Source: Appendix Table 1.

Household Energy Cost Impacts

Energy costs are straining low- and middle-income family budgets. Heating, cooling, and transportation are necessities of life, and the rapid increase in consumer energy costs is impacting low- and middle-income family budget choices among energy and other necessary goods and services, such as health care, housing, and nutrition.

As energy costs have risen over the past decade, the real, inflation-adjusted incomes of American families have been declining. The U.S. Census Bureau reports in its latest assessment of income and poverty that:

> Real median household income was $49,445 in 2010, a 2.3 percent decline from 2009. Since 2007, median household income has declined 6.4 percent (from $52,823) and is 7.1 percent below the median household income peak ($53,252) that occurred in 1999.[21]

Poverty rates have increased along with the decline in real family incomes over the past decade, reaching historic highs in 2010:

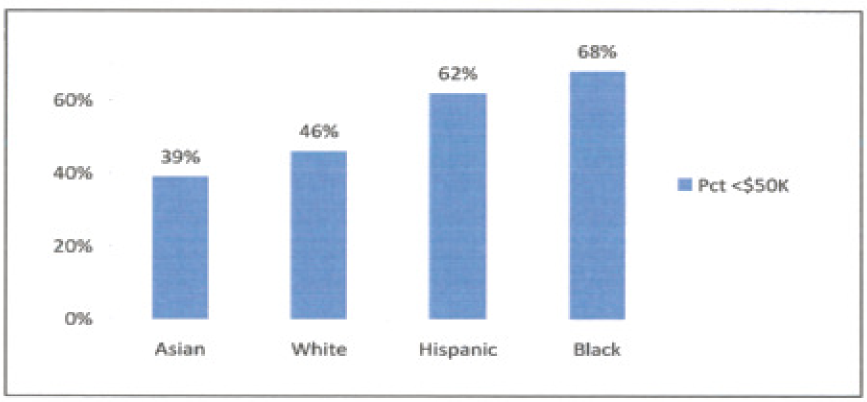
> The official poverty rate in 2010 was 15.1 percent—up from 14.3 percent in 2009. This was the third consecutive annual increase in the poverty rate. Since 2007, the poverty rate has increased by 2.6 percentage points, from 12.5 percent to 15.1 percent. … In 2010, 46.2 million people were in poverty, up from 43.6 million in 2009—the fourth consecutive annual increase in the number of people in poverty. …The number of people in poverty in 2010 is the largest number in the 52 years for which poverty estimates have been published.[22]

For low- and middle-income families, energy costs are now consuming a portion of after-tax household income comparable to that traditionally spent on major categories such as housing, food, and health care. The Bureau of Labor Statistics' 2010 Consumer Expenditure Survey reports that 121 million "consumer units" in the U.S. with an average pre-tax income of $62,481 in 2010 spent an average of $16,557 (27%) on housing, $6,129 (10%) for food, and $3,157 (5%) on healthcare.[23]

Energy Cost Impacts on Minorities

EIA's residential energy consumption surveys do not provide energy consumption expenditures by income group combined with minority status. However, as illustrated in Chart 4, the unequal distribution of household incomes is a principal factor leading to disproportionate energy cost impacts on many minority families. More than 60% of Black and Hispanic families had pre-tax household incomes below $50,000 in 2010, compared with 39% for Asian families and 46% for white households.

Chart 4
Percentage of Households with Pre-Tax Incomes below $50,000, 2010



Source: U.S. Bureau of the Census, Current Population Survey Annual Social and Economic Supplement (2011).

Real, inflation-adjusted per capita incomes have declined due to the recession, with larger impacts on Black and Hispanic families than on Asian or white households. The U.S. Census Bureau reports that these recent declines in the real income of American families are part of a long-term declining trend that has particularly impacted Black and Hispanic households:

> Since 2007, real median household income has declined for all race and Hispanic-origin groups. Non-Hispanic-White household income declined by 5.4 percent, Black household income by 10.1 percent, Asian household income by 7.5 percent, and Hispanic household income by 7.2 percent.
>
> Real median household income has not yet recovered to pre-2001 recession all-time highs. Household income in 2010 was 7.1 percent lower for all races combined (from $53,252 in 1999), 5.5 percent lower for non-Hispanic Whites (from $57,781 in 1999), 14.6 percent lower for Blacks (from $37,562 in 2000), 8.9 percent lower for Asians (from $70,595 in 2000), and 10.1 percent lower for Hispanics (from $41,994 in 2000). Black households experienced the largest household income percentage decline among the race and Hispanic origin groups.[24]

Poverty rates have increased in tandem with the declines in real incomes for Black and Hispanic households. The Census Bureau reports that:

> For Blacks, the poverty rate increased to 27.4 percent in 2010, up from 25.8 percent in 2009, while the number in poverty increased to 10.7 million from 9.9 million. For Asians, the 2010 poverty rate and the number in poverty … were not statistically different from 2009. However, the poverty rate increased for Hispanics to 26.6 percent in 2010 from 25.3 in 2009, and the number of Hispanics in poverty increased to 13.2 million from 12.4 million.[25]

Table 3 summarizes 2010 household incomes for Asian, Black, Hispanic, and white families in different gross annual income brackets. In 2010, the average incomes of Hispanic and Black families were 30% and 39% lower, respectively, than the average income of white households. Asian households, on the other hand, enjoyed average annual incomes of $84,828 in 2010 compared with the U.S. average income of $67,530. Based on these income inequality data, disproportionate numbers of Black and Hispanic families are more vulnerable to energy price increases than Asian or white families.

Table 3. Distribution of U.S. Households by Pre-tax Income, 2010

Pre-tax annual income	<$10K	$10-<$30K	$30-<$50K	<$50K	≥$50K	Totals
Percentage of households						
Asian	7%	17%	14%	38%	62%	100%
Black	16%	31%	21%	68%	32%	100%
Hispanic	10%	30%	22%	62%	38%	100%
White	6%	21%	19%	46%	54%	100%
U.S. average	8%	23%	19%	50%	50%	100%
Avg. pre-tax income						Average
Asian	$3,057	$19,841	$39,445	$23,923	$122,997	$84,828
Black	$4,968	$19,014	$38,862	$21,646	$93,539	$44,802
Hispanic	$4,964	$19,718	$38,764	$24,123	$95,848	$51,554
White	$5,005	$19,763	$39,315	$25,778	$113,991	$73,439
U.S. average	$4,906	$19,638	$39,183	$24,752	$111,018	$67,530

Source: U.S. Bureau of the Census, Current Population Reports – 2010 Annual Social and Economic Supplement (2011).

Impacts on Senior Citizens

More than 28% of U.S. households receive Social Security benefits. The average basic Social Security income of these 32.6 million households was $16,236 in 2010.[26] Some 61% of households receiving Social Security benefits also received other retirement income averaging $22,006.[27]

The U.S. Census Bureau reports that the median income of 25.4 million households with a principal householder aged 65 or older was $31,408 in 2010, 36% below the national household median income of $49,445.[28]

Lower-income senior households that depend mainly on fixed incomes are among those most vulnerable to energy price increases. Food, health care, and other necessities compete with energy costs for a share of the household budget. The $31,408 median income of senior U.S. households means that half of these households depend on incomes below this level.

Conclusion

On average, energy costs have nearly doubled as a fraction of annual family budgets since 2001. The unequal distribution of incomes in the United States imposes disproportionate energy cost burdens on minority and senior households. The average after-tax incomes of low- and middle-income U.S. families have not grown since 2001. Meanwhile, inflation has eroded 27% of the value of American families' incomes.[29]

The prices of petroleum-based fuels, particularly gasoline and home heating oil, have increased significantly in the past decade. The rapid escalation of consumer energy prices, along with stagnant income growth, magnifies the impact of energy costs on all American families.

Acknowledgment – This report was prepared for ACCCE by Eugene M. Trisko, who has conducted these analyses annually since 2000. Mr. Trisko is an attorney and energy economist who represents labor and industry clients. He previously served as at an attorney in the Bureau of Consumer Protection of the U.S. Federal Trade Commission and as an expert witness on utility cost of capital.

Notes

[1] Data on residential energy consumption patterns by income are derived from U.S. Department of Energy, Energy Information Administration, "Survey of Residential Energy Consumption," (2001 and 2005 surveys)," available at http://www.eia.doe.gov/emeu/recs/contents.html. Data for 2005 energy consumption by household income are updated to estimated 2012 values based on consumer residential energy cost projections for 2012 in EIA's "Short-Term Energy Outlook" (January 2012).

[2] Household income by gross income category are calculated from the 2010 distribution of household income in U.S. Bureau of the Census, Current Population Survey, "Annual Social and Economic Supplement" (2011).

[3] Congressional Budget Office (CBO), "Effective Federal Tax Rates Under Current Law, 2001 to 2014" (August 2004), and "Effective Federal Tax Rates 1979-2006" (April 2009). Effective federal tax rates for the income categories in this paper were interpolated from CBO's tax rates by income quintile based on the distribution of 2001, 2005 and 2010 household incomes. State income tax rates are estimated from tax rates summarized in Federation of Tax Administrators, http://www.taxadmin.org/fta/rate/ind_inc.html.

[4] See, http://www.neada.org/appropriations/index.html.

[5] U.S. Bureau of Labor Statistics, CPI Inflation Calculator, available at http://data.bls.gov/cgi-bin/cpicalc.pl

[6] See, U.S. EPA, "The Benefits and Costs of the Clean Air Act from 1990 to 2020" (2011) at Table 3-2 (electric utility direct annual compliance costs increased from an estimated $1.4 billion ($2006) in 2000 to $6.6 billion ($2006) in 2010.) Since 2000, the utility sector has complied with the federal acid rain program enacted in the 1990 Clean Air Act Amendments, EPA's 1998 Ozone Transport Rule reducing nitrogen oxide emissions in 19 eastern states, Phase I of EPA's 2005 Clean Air Interstate Rule requiring further reductions of sulfur dioxide and nitrogen oxide emissions in the eastern U.S., and a variety of other federal and state air and water quality standards.

[7] U.S. EPA, "Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards," (December 2011) at ES-14.

[8] U.S. EPA, "The Benefits and Costs of the Clean Air Act," *supra.*

[9] U.S. DOE/EIA, "Electric Power Annual 2010," (historical tables, 2011) and "Short-Term Energy Outlook," (January 2012).

[10] U.S. DOE/EIA, "Short-Term Energy Outlook" (January 2012), Table 2.

[11] *Id.*

[12] U.S. DOE/EIA, "Annual Energy Outlook 2012 Early Release," (January 2012) at 5. One thousand cubic feet of natural gas is equivalent to approximately 1.04 million BTUs.

[13] *Id.*
[14] *Id.*
[15] U.S. DOE/EIA, "Residential Energy Consumption Survey, 2005," (2009), viewable at http://www.eia.doe.gov/emeu/recs/contents.html.
[16] U.S. DOE/EIA, "Household Vehicles Energy Use: Latest Data & Trends" (November 2005), available at http://www.eia.doe/gov/emeu/rtecs/nhts_survey/2001/.
[17] U.S. Department of Transportation, 2009 National Household Travel Survey (2011), Table 6.
[18] U.S. Department of Transportation, "NHTS Brief" (April 2008), Exhibit 3
[19] U.S. DOT, NHTS, *supra*, at Table 34 (average household gasoline expenditures increased from $1,275 in 2001 to $3,308 in 2009.) The average price of gasoline in 2009 was $2.40/gallon, one-third less than the $3.54/gallon price that EIA projects for 2012. Adjusted by the change in average gasoline prices, the 2009 NHTS data imply average 2012 household gasoline expenditures of $4,366, compared with the $3,957 estimate in this report.
[20] U.S. Department of Transportation, 2001 National Household Travel Survey, "Summary of Travel Trends" (December 2004).
[21] U.S. Census Bureau, "Income, Poverty, and Health Insurance Coverage in the United States: 2010" (2011), at 5.
[22] *Id.*, at 14.
[23] See, Bureau of Labor Statistics, Economic News Release, September 27, 2011, available at: http://www.bls.gov/news.release/cesan.nr0.htm. See also, Economic Policy Institute, "Basic Family Budgets: Working Families' Incomes Often Fail to Meet Living Expenses Around the U.S.," Briefing Paper (2005), available at: http://www.epi.org/publication/bp165/
[24] U.S. Census Bureau, "Income, Poverty, and Health Insurance Coverage in the United States: 2010" (2011), at 8.
[25] *Id.*, at 17.
[26] U.S. Census Bureau, "American Community Survey – 2010 American Community Survey 1-Year Estimates," (2012).
[27] *Id.*
[28] U.S. Census Bureau, "Income, Poverty, and Health Insurance Coverage in the United States: 2010" (2011), Table 1.
[29] U.S. Bureau of Labor Statistics, CPI Inflation Calculator, available at http://data.bls.gov/cgi-bin/cpicalc.pl

APPENDIX TABLE 1 - 2001, 2005 AND PROJECTED 2012 HOUSEHOLD INCOME AND ENERGY EXPENSES

2001 HOUSEHOLD ENERGY EXPENSES BY INCOME CATEGORY - ALL U.S. HOUSEHOLDS

	<$10K	$10K-<$30K	$30K-</=$50K	>/=$50K	TOTALS	SUBTOTALS $10K-<$50K	<$50K	>/=$50K
Households (Mil.)	9.8	28.9	23.6	47.0	109.3	52.5	62.3	47.0
Pct of total households	9.0%	26.4%	21.6%	43.0%	100.0%	48.0%	57.0%	43.0%
Avg pre-tax income	$5,733	$19,707	$39,201	$107,649	$60,488	$28,470	$24,893	$107,649
Effec. fed tax rate %	2.0%	8.5%	13.4%	23.1%	17.3%	10.7%	9.3%	23.1%
Est. state tax rate%	1.5%	2.6%	4.0%	6.3%	4.4%	3.2%	3.0%	6.3%
Est. after-tax income	$5,532	$17,520	$32,380	$76,054	$47,396	$24,504	$21,834	$76,054
Residential energy $	$1,039	$1,260	$1,456	$1,836	$1,493	$1,348	$1,299	$1,836
Residential electric $	$628	$772	$922	$1,172	$938	$839	$806	$1,172
Other resid. energy $	$411	$488	$534	$664	$555	$509	$493	$664
Transport energy $	$934	$1,160	$1,638	$2,195	$1,680	$1,375	$1,306	$2,195
Total energy $	$1,973	$2,420	$3,094	$4,031	$3,218	$2,723	$2,605	$4,031
Energy % of after-tax inc.	35.7%	13.8%	9.6%	5.3%	6.8%	11.1%	11.9%	5.3%
Resid. % of after-tax inc.	18.8%	7.2%	4.5%	2.4%	3.2%	5.5%	6.0%	2.4%
Trans. % of after-tax inc.	16.9%	6.6%	5.1%	2.9%	3.5%	5.6%	6.0%	2.9%

2005 HOUSEHOLD ENERGY EXPENSES BY INCOME CATEGORY - ALL U.S. HOUSEHOLDS

	<$10K	$10K-<$30K	$30K-</=$50K	>/=$50K	TOTALS	$10K-<$50K	<$50K	>/=$50K
Households (Mil.)	9.4	28.1	23.4	53.5	114.4	51.5	60.9	53.5
Pct of total households	8.2%	24.6%	20.5%	46.8%	100.0%	45.0%	53.2%	46.8%
Avg pre-tax income	$5,400	$19,695	$39,388	$106,947	$63,344	$28,643	$25,055	$106,947
Effec. fed tax rate %	1.8%	5.0%	10.4%	17.9%	16.7%	7.5%	6.6%	17.9%
Est. state tax rate%	1.0%	2.6%	4.0%	6.3%	4.5%	3.2%	2.9%	6.3%
Est. after-tax income	$5,249	$18,198	$33,716	$81,066	$49,924	$25,581	$22,682	$81,066
Residential energy $	$1,351	$1,498	$1,733	$2,173	$1,850	$1,604	$1,565	$2,173
Residential electric $	$785	$914	$1,098	$1,361	$1,150	$998	$965	$1,361
Other resid. energy $	$566	$583	$635	$812	$699	$607	$600	$812
Transport energy $	$1,513	$1,878	$2,652	$3,554	$2,790	$2,230	$2,119	$3,554
Total energy $	$2,863	$3,375	$4,385	$5,728	$4,640	$3,834	$3,684	$5,728
Energy % of after-tax inc.	54.5%	18.5%	13.0%	7.1%	9.3%	15.0%	16.2%	7.1%
Resid. % of after-tax inc.	25.7%	8.2%	5.1%	2.7%	3.7%	6.3%	6.9%	2.7%
Trans. % of after-tax inc.	28.8%	10.3%	7.9%	4.4%	5.6%	8.7%	9.3%	4.4%

PROJECTED 2012 HOUSEHOLD ENERGY EXPENSES BY INCOME CATEGORY - ALL U.S. HOUSEHOLDS

	<$10K	$10K-<$30K	$30K-</=$50K	>/=$50K	TOTALS	$10K-<$50K	<$50K	>/=$50K
Households (Mil.)	9.2	28.0	22.6	58.9	118.7	50.6	59.8	58.9
Pct of total households	7.8%	23.6%	19.0%	49.6%	100.0%	42.6%	50.4%	49.6%
Avg pre-tax income	$4,906	$19,638	$39,183	$111,018	$67,530	$28,370	$24,751	$111,018
Effec. fed tax rate %	1.9%	5.2%	10.4%	17.8%	16.6%	7.5%	6.7%	17.8%
Est. state tax rate%	1.0%	2.6%	4.0%	6.3%	4.6%	3.2%	2.9%	6.3%
Est. after-tax income	$4,764	$18,106	$33,541	$84,263	$53,229	$25,320	$22,390	$84,263
Residential energy $	$1,596	$1,773	$2,044	$2,554	$2,131	$1,894	$1,848	$2,554
Residential electric $	$930	$1,083	$1,302	$1,613	$1,330	$1,181	$1,142	$1,613
Other resid. energy $	$666	$690	$743	$941	$800	$713	$706	$941
Transport energy $	$2,106	$2,621	$3,705	$4,953	$3,957	$3,105	$2,951	$4,953
Total energy $	$3,702	$4,394	$5,749	$7,507	$6,088	$4,999	$4,799	$7,507
Energy % of after-tax inc.	77.7%	24.3%	17.1%	8.9%	11.4%	19.7%	21.4%	8.9%
Resid. % of after-tax inc.	33.5%	9.8%	6.1%	3.0%	4.0%	7.5%	8.3%	3.0%
Trans. % of after-tax inc.	44.2%	14.5%	11.0%	5.9%	7.4%	12.3%	13.2%	5.9%

Sources: Population and income data from U.S. Bureau of the Census, Current Population Survey Supp. (2001, 2005, 2011 eds.) Residential energy costs are based on U.S. DOE Residential Energy Consumption Survey (2001, 2005 eds.) 2012 projections based on changes in 2005-2012 residential energy prices from U.S. DOE/EIA Annual Energy Review 2005 and Short-Term Energy Outlook (January 2012). Transportation energy expenditures are estimated from U.S. DOE/EIA, Household Vehicle Energy Use: Latest and Trends (Nov 2005) and DOE/EIA Short-Term Energy Outlook (January 2012). Gasoline use per household in 2012 is reduced by 6.3% from 2001 levels based on data in US DOT 2009 National Highway Transportation Survey. Average effective federal tax rates are estimated from Congressional Budget Office, Effective Federal Tax Rates Under Current Law, 2001-2014 (August 2004), and Effective Federal Tax Rates, 1979-2006 (April 2009). State tax rates estimated from www.taxadmin.org/fta/rate/ind_inc.html.

TAB 4

Special Report

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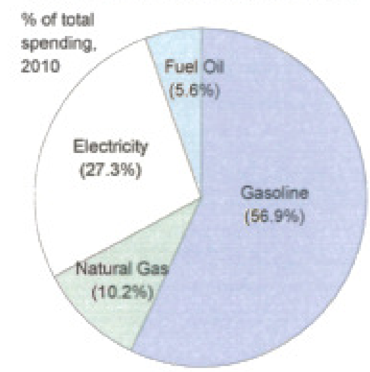
Energizing Household Energy Efficiency

- **Substantial progress has been made in improving household energy efficiency. However, more needs to be done, especially with energy usage and pricing on the upswing. Rising energy prices should help speed more efficiency gains in the future, generating long-term cost savings for households.**

High energy costs, led by the roughly 40% jump in gasoline and heating fuel prices over the past two years, are taking a toll on consumer confidence, purchasing power and — ultimately — spending. In the first quarter of 2011, the share of household after-tax income allocated to energy consumption — gasoline, electricity, natural gas and other fuels — totaled 6½%, up roughly a percentage point from the level prevailing in early 2009. The recent easing back in oil prices has likely lowered this ratio in the current quarter, but only modestly.

CHART 1

HOUSEHOLD ENERGY CONSUMPTION



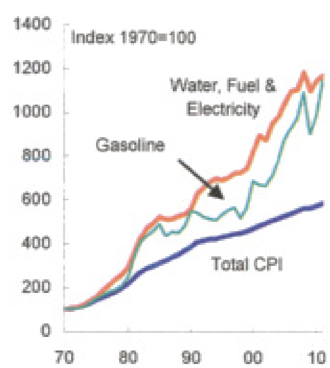
Statistics Canada, Scotia Economics

High energy costs have dampened spending on other 'less discretionary' purchases. Energy demand is inelastic, at least in the short-term, due to the limited ability of households to substantially alter their driving patterns and other daily activities. Household expenditures on energy totaled roughly $60 billion in 2010, or about $4,500 per household. We estimate that higher energy costs will add about $6 billion to this bill in 2011 — spending dollars that could otherwise have been allocated to other retail purchases, saved or used to pay down debt.

The squeeze on household budgets would be greater if not for continued soft natural gas prices. Moderate electricity price increases from 2007-2009 have also helped, though they too have begun to pick up more recently. Gasoline purchases have typically accounted for about half of total household energy consumption, though this share has risen in recent years (chart 1). Expenditures on housing-related energy — natural gas, fuel oil and electricity — account for the remainder.

CHART 2

INFLATION



Statistics Canada, Scotia Economics

Long-Term Savings Outweigh Transition Costs

There is an ongoing urgency to reduce household energy consumption because of the discernible upward trend in the price of energy. Energy costs have, on average, outpaced the general rate of inflation since the 1980s, and increasingly so over the past decade (chart 2). The rapid expansion in industrial activity among emerging markets, led by China and India, is a major factor in lifting demand, while periodic bouts of

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geopolitical tension have added to supply concerns. While natural gas price trends remain encouraging for consumers, the risk lies toward higher electricity costs and continued elevated oil prices.

From the perspective of households, reducing energy consumption, or at least slowing its rise, could generate significant long-term cost savings. It would also reduce the sensitivity of household spending to future energy price shocks. Despite improvements in energy efficiency in both the residential and passenger transportation sectors over the past two decades, household energy consumption as a share of total spending has remained relatively constant in a range of 6-7% (chart 3).

Signs Of Progress ...

There are a number of encouraging trends underway supporting gains in household energy efficiency. Motivated in part by high gasoline prices, consumers are shifting toward smaller, more fuel-efficient motor vehicles. Sales of compact cars and small crossover utility vehicles (CUVs) were up 16% y/y in April, 10 percentage points above the industry-wide gain, and now account for fully a third of overall sales volumes in Canada.

More Canadians are choosing higher-density urban living. High-density housing is more energy-efficient than traditional detached homes (chart 4). It also leads to lower motor vehicle use given proximity to services and better public transportation options. High land costs, reduced housing affordability, urban renewal efforts and demographic trends (including an aging population and increased immigration) will continue to support multi-unit housing demand.

Third, new construction is becoming more energy-efficient. Driven by changing consumer demands and regulatory standards, new home builders are increasingly adopting energy-efficient technologies and materials. A good example are LEED standards. A LEED-certified home is estimated to use 30-60% less energy and 50% less water than an average home.

... But More Needs To Be Done

New construction takes considerable time to impact the energy efficiency of the aggregate housing stock. Canada's existing stock of housing totals more than 13 million dwellings. The cumulative addition to this stock from the boom in new construction over the past decade represents just 15% (chart 5).

Meanwhile, Canada's housing stock is aging. The majority of Canadian residences were built prior to the 1980s, and are far less energy efficient than current or more recent construction (chart 6). Data from the 2006 census suggested that over one-third were in need of minor or major repair.

As a result, energy-efficient renovations and retrofits to existing homes have the potential to make a bigger impact in driving improvements in the housing stock. Expenditures on renovations and alternations are the fastest component of housing investment over the past decade, expanding an average 8% annually in inflation-adjusted terms. The $45 billion renovation industry is approaching new construction in total dollar value.

CHART 3

HOUSEHOLD ENERGY EXPENDITURES

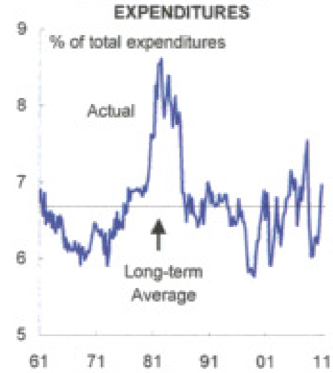

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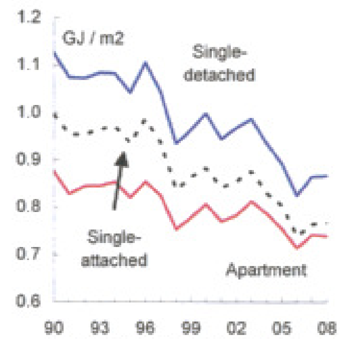
CHART 4

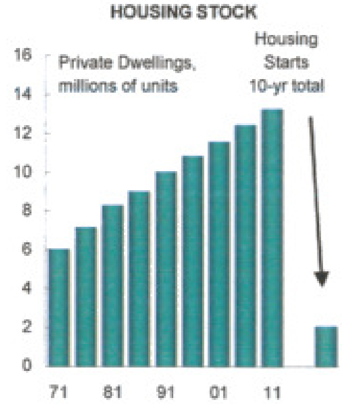
RESIDENTIAL ENERGY INTENSITY



Natural Resources Canada

CHART 5

HOUSING STOCK



Census of Canada, Scotia Economics

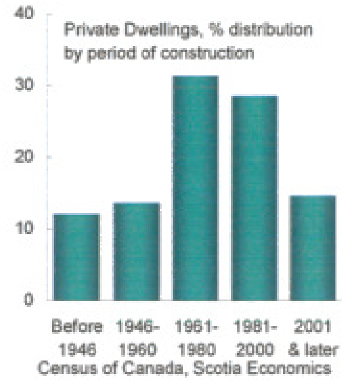
Energy efficiency is not a major driver behind decisions to renovate. A CHMC survey found less than 10% of completed or planned renovations are undertaken to make the home more energy efficient. Households have nonetheless shown a desire to incorporate energy-efficient and environmentally friendly components, such as replacing doors and windows or installing low-flow plumbing, into their renovation projects.

Looking ahead, we expect the pace of renovation spending could begin to moderate from the strong gains of the past decade alongside a more subdued outlook for home sales and price appreciation. Higher borrowing costs could also slow the drive to renovate, particularly for larger projects. Yet there are many affordable cost-saving options for boosting household energy efficiency, including replacing conventional incandescent light bulbs with more efficient alternatives such as compact fluorescent lights (CFLs), replacing aging appliances with newer more efficient models, or using a backyard clothesline.

Households can also take advantage of various programs and incentives available from federal, provincial, territorial and municipal governments as well as certain energy utilities to conserve energy and generate long-term cost savings. These range from the use of smart utility meters and off-peak pricing, to targeted rebates for energy efficient home improvements (e.g. replacing older less efficient heating/cooling systems or adding insulation). The federal *Budget 2011*, for example, committed an additional $400 million over the 2011-2012 fiscal year to extend the popular ecoENERGY Retrofit-Homes program, which provides grants to eligible households to offset the cost of energy-efficient upgrades.

CHART 6

HOUSING STOCK



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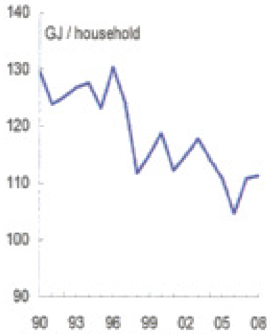
Appendix A: Household Energy Use and Energy Intensity

Residential energy intensity (i.e. energy use per household) has declined steadily since the mid-1990s. A shift from heating oil to more efficient natural gas systems, significant gains in the energy-efficiency of major appliances and the increased adoption of compact fluorescent lights (CFLs) have more than offset the negative impact of larger average dwelling sizes, a surge in the use of personal computers and electronic devices, and increasing air conditioning use. At the same time, population growth combined with fewer people per household has contributed to the continuing rise in total residential energy use over the same period.

A similar trend is evident in the passenger transportation sector. Energy intensity (i.e. energy use per passenger kilometre) has declined steadily since the early 1990s alongside improvements in motor vehicle fuel efficiency. Nonetheless, total energy use has risen steadily, with fuel efficiency gains more than offset by a rise in the number of drivers and registered vehicles, the growth in the popularity of light trucks (e.g. minivans and sport-utility vehicles) and an increase in the average distanced traveled per driver.

RESIDENTIAL ENERGY INTENSITY



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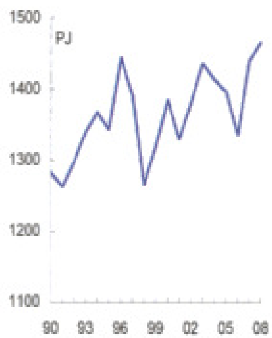
RESIDENTIAL ENERGY USE



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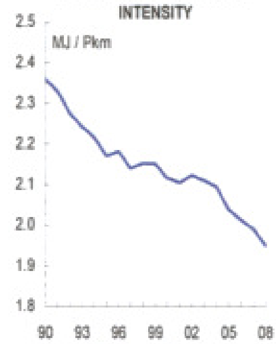
PASSENGER TRANSPORTATION ENERGY INTENSITY



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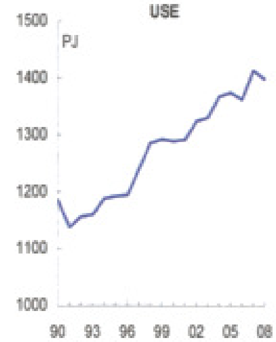
PASSENGER TRANSPORTATION ENERGY USE



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Appendix B: Highlights from Statistics Canada's 2009 Households and the Environment Survey

A recent study by Statistics Canada shows that Canadians are increasingly adopting energy-efficient and environmentally-friendly practices in their home, though there is still considerable scope to boost participation further:

- 75% of households had at least one compact fluorescent light (CFL), though the use of halogen and diode lights remained low
- 49% of households with a thermostat had a programmable one, up from 42% in 2007; 61% lowered the nightly temperature during the winter, up from 55% in 2007
- 64% used a clothesline or drying rack
- 63% had a low-flow shower head, up from 28% in 1991
- 42% had a low-volume toilet, up from 9% in 1991
- 18% of non-apartment dwellers had a rain barrel or cistern to capture rain water
- 66% drank primarily tap water, up from 59% in 2007; 24% drank primarily bottled water, down from 30% in 2007

TAB 1

Consumer Watch Canada

April 11, 2011

CIBC

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Sucking Energy Out of Households

by Benjamin Tal

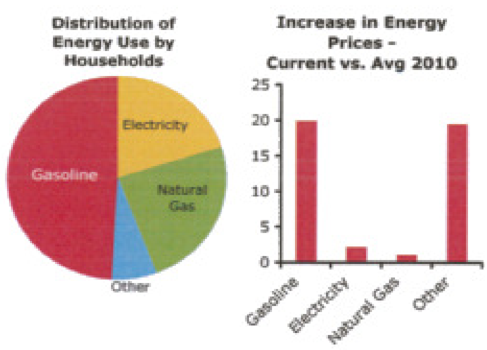
No matter how you look at it, higher energy costs bite significantly into Canadian households' pockets. For as long as it's sustained, the near 25% hike in gasoline prices since late 2010 will be equivalent to a seven percent hike in the income tax bill of households during the course of 2011. That can influence not only the speed and composition of growth in personal consumption but also the health of Canada's retail sector.

Energy Costs and Canadian Households

Households account for one-third of total energy consumption in the Canadian economy, and about half of what they consume is in the form of gasoline (Chart 1). So the recent increase in gasoline and heating oil prices, although not accompanied by a similar increase in electricity and natural gas prices, is significant enough to impact overall consumer spending materially. Note that the rising value of the Canadian dollar has mitigated the price increase for consumers in Canada. Gas prices in Canada have risen by 23% since September 2010 vs. a 32% increase in the US. This gap is mostly explained by the 8% appreciation in the value of the loonie against the US dollar since September 2010, and to a lesser extent the high level of fixed gasoline tax here.

Chart 1

Energy and the Canadian Consumer



Source: StatCan, Natural Resources Canada, CIBC

Still, current gasoline prices are getting closer to the levels seen in the 2008 oil shock and in real terms, they are 30% higher than the level seen during the 1991 shock (Chart 2). As a share of disposable income, spending on gasoline is now estimated to be less than half a percentage point shy of the peak seen in 2008, and it has already reached that peak when measured relative to total retail sales (Chart 3).

Chart 2

Inflation-adjusted Gasoline Prices in Canada

Source: MJ Ervin & Associates Inc, StatCan, CIBC

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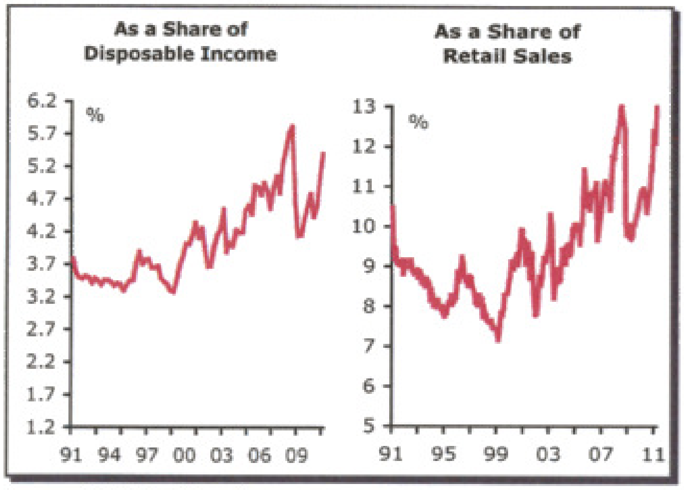
Chart 3

Gasoline Consumption

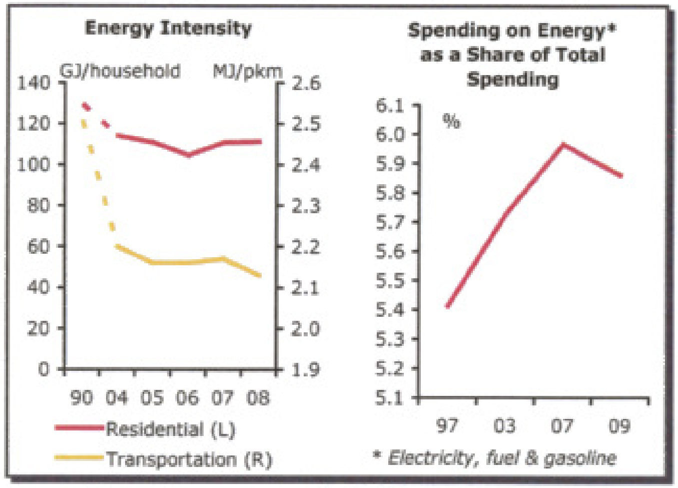


Source: Statistics Canada

Note: Data for 1st quarter estimated by CIBC

Chart 4

Despite Improving Energy Intensity (L); Household Spending on Energy is Rising (R)



Source: Natural Resources Canada, CIBC

Despite an improvement in energy efficiency over the past decade (Chart 4, left), Canadians still spend close to 6% of their total spending on energy — almost half a point higher than the share seen in the mid-1990s (Chart 4, right).

What Will Give?

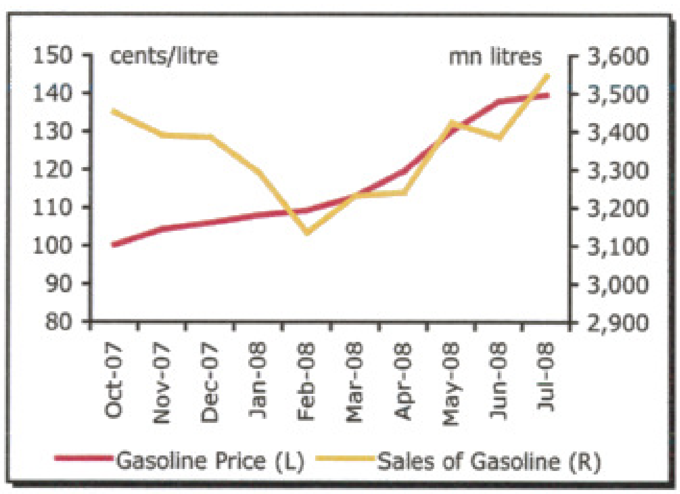
How will Canadians react to the current surge in gasoline prices? If history is any guide, higher prices will not impact demand for gasoline in the near-term. Note that in the most recent energy shock, the 40% increase in prices between October 2007 and July 2008 met with virtually no change in the aggregate volume of gasoline consumption. Canadians drivers consumed 3.5 billion litres of gasoline a month in July 2007 when gasoline cost 100 cents a litre and they continued to consume 3.5 billion litres when the price was 140 cents a litre (Chart 5).

As of 2010, total spending on energy by Canadian households totaled just over $88 billion. If the recent increase in energy prices is sustained and assuming the same price-elasticity observed in 2007-08, this spending will rise by more than $12 billion or close to $950 per household during the course of 2011. That's equivalent to a 7% increase in the average Canadian income tax bill.

How great an obstacle energy spending poses will vary greatly across regions and income levels. Households in energy-rich provinces such as Alberta will enjoy a wealth and income boost from rising energy prices that will offset some of the increase in their energy costs. By income, higher-income households may be able to absorb the increase in energy costs with little notice. But for low- and middle-income Canadians, the situation is very different. Given the asymmetrical income distribution among Canadian households, the "average" household may not be as representative as it once was. Using the median household number may be a better choice. By

Chart 5

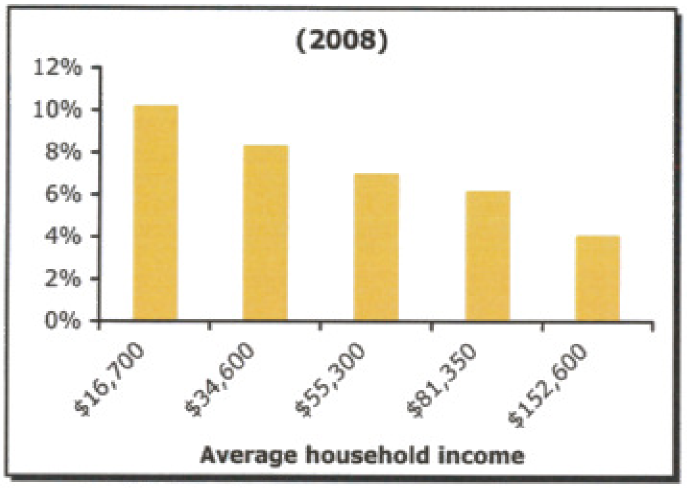
Drivers Did Not Cut Down During Last Gasoline Price Hike



Source: Statistics Canada, CIBC

Chart 6

Energy Spending as a Share of Income



Source: Statistics Canada, CIBC

this measure energy represents no less than 8% of total household spending — only half a point shy of a record high.

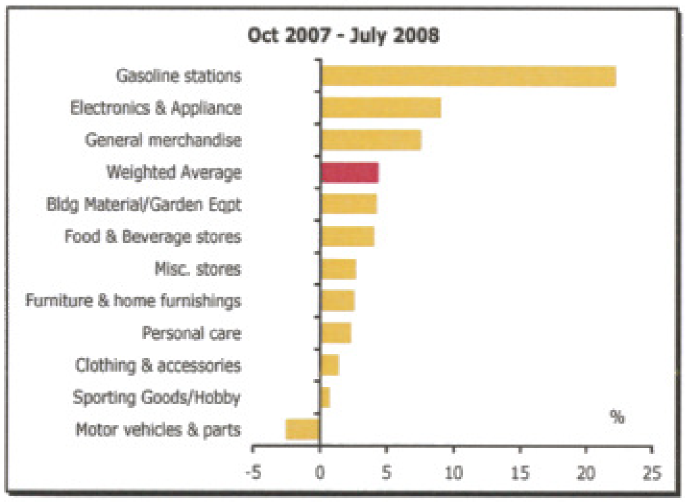
The distinction between mean and median income is important because it likely signals a difference in consumer behaviour. Higher-income households (that pull up the mean measure relative to the median measure) are better able to absorb the increase in energy spending without much sacrifice to their non-energy spending. In other words, the extra cost is largely borne by their savings. But low- and middle-income Canadian consumers are less likely to do so because energy represents a much larger share of their overall spending. For example, low-income households spend more than twice as much of their income on energy as do high-income households (Chart 6). That suggests that high-end retailers will bode better in this environment compared to low-end retailers that service low to medium income households.

Inelastic demand for gasoline and asymmetric energy pain can impact the composition of consumer spending materially. Again, using the price hike of 2007-08 as a guide, we can clearly see that higher gas prices have a significant negative impact on sales of motor vehicles and parts as well as on less essential items such as sporting goods, clothing and personal care (Chart 7)[1].

Perhaps the most important composition effect will be seen within the food category. There is clear evidence that higher gasoline prices lead to reallocation of expenditures across and within food-consumption categories. With gasoline expenditures rising, consumers substitute food-away-from-home (remote locations) towards groceries. And within the grocery stores, consumers substitute away from regular shelf-price products towards promotional items. On average, it is estimated that the 25% increase in gas prices will cut the net price paid per grocery item by 2%-3%[2].

Chart 7

Growth in Retail Sales by Product



Source: Statistics Canada, CIBC

Notes:

(1) These trends were also influenced by the early stages of the economic slowdown of 2008.

(2) Based on American data: Source: "Revisiting the Income Effect: Gasoline Prices and Grocery Purchases", NBER 2008.

TAB 2

The Impact of Electricity Price Increases and Eskom's Six-Year Capital Investment Programme on the South African Economy

May 2011

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Table of Contents

Preface

In December 2010, Eskom commissioned Pan-African Research and Investment Services (Pty) Ltd to investigate the impact of electricity price hikes as well as Eskom's Capital Expenditure Programme on the SA economy. The present report presents the preliminary outcome of this multi-faceted research. Generally speaking, electricity price hikes have, by and large, a negative impact on the economy whereas Eskom's multi-year investment programme leads to positive outcomes in both the short and long term.

The report is made up of four chapters. Chapter One summarizes the econometric analyses of electricity price hikes and their impact on the SA economy, with specific focus on key macroeconomic indicators such as GDP growth, employment and investment.

Chapter Two focuses on electricity prices and sectoral/industry cost structures. A high level survey of firms in different sectors is used to assess the first-round impact of price increases on the firm's cost structure. This survey is still in progress, and as the number of respondents rises, the results will be updated in the next draft of this report.

Chapter Three captures the impact of Eskom's capital expenditure programme and its impact on the SA economy and key macroeconomic indicators.

Chapter Four integrates the previous three chapters, focusing on the net effects of price increases (largely negative) and investment impact (by and large positive); this chapter also examines issues related to the financing options for Eskom's capital investment programme.

Chapter Five analyse the impact of the electricity price increases and Eskom's capital expenditure on the poor. It also provides the mitigating measures put in place by NERSA and a critical review of these is presented.

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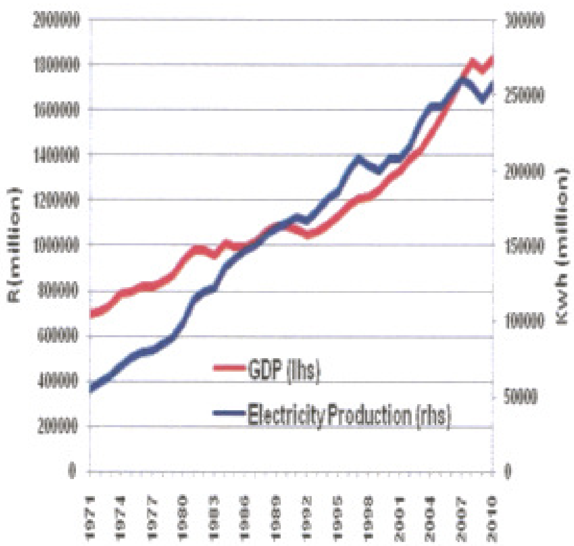
Detailed Executive Summary

The Importance of the Energy Sector

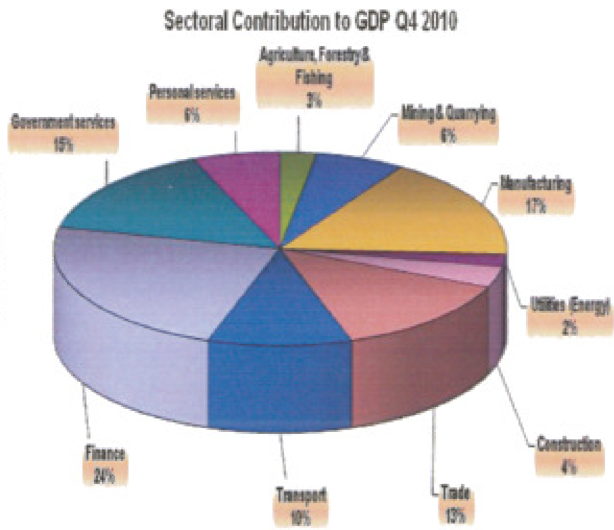
The energy sector of the economy remains an integral part of infrastructural development which, in effect, will set the foundation for broad based sustainable long term economic growth and development. It is apparent that the current and future growth of an economy is tied to sufficient and reliable energy availability and the equitable access to it.

Figure 1 shows the positive relationship that existed between GDP and energy production in South Africa over the years. Given the bi-directional causal effects that exists between the two variables (i.e. GDP determines the level of energy produced and vice-versa) it could be argued that the prosperity of the country is very dependent on efficient and sustainable supply and distribution of energy. Technically, availability of energy is a precondition for growth.

Figure 1: Relationship between GDP and Energy



Source: South African Reserve Bank



Source: StatsSA, 22 February 2011

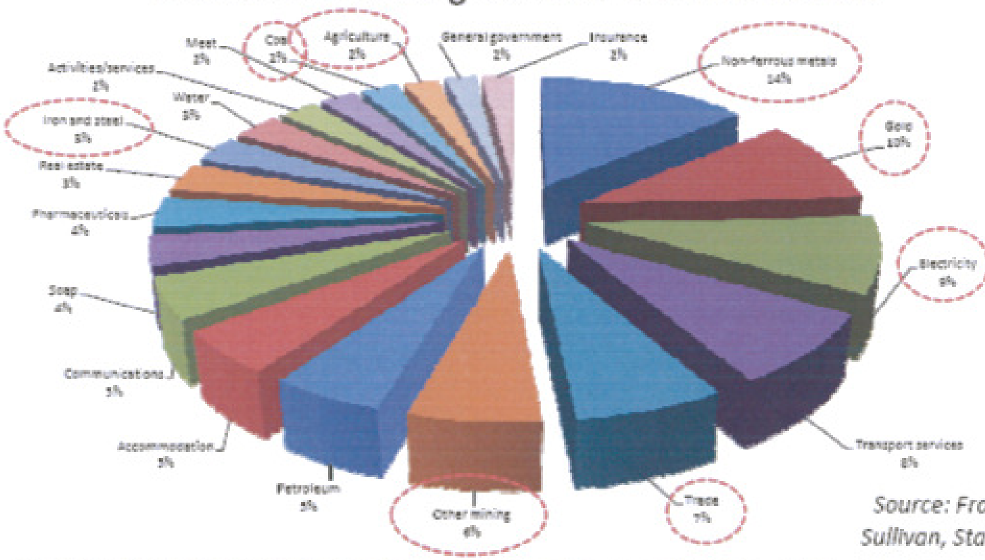
Statistically, about 90 percent of the variation in the South African GDP can be explained by energy while on the other hand the same percentage variation in energy production is explained by GDP. However, any shock to the energy sector is expected to directly affect the entire economic growth of the country. The most recent energy crisis of Q1-2008 is a case in point.

As illustrated in the above chart, the direct contribution of the energy sector to the GDP is relatively small at 2%. However, the sector plays a significant indirect role. This sector serves as a critical input for all the other sectors of the economy.

The structure of the South African economy reflects a very high energy intensity use in the production process. The mining & quarrying sector - which had been the bedrock of the economy over the past century - is one of the most energy intensive sectors in which electricity constitutes about 5 percent of the total intermediate inputs. Within the mining sector, some commodities are more energy intensive than others. In general, gold mining in South Africa is largely deep underground mining, thus requiring electricity intensive technology. Other sectors such as transport & communication, wholesale & retail trade, manufacturing and agriculture also recorded relatively high levels of energy use as inputs in their production processes. Manufacturing in particular is energy intensive, and some industries, such as aluminium smelting and related industries, are exceptionally electricity intensive. Not only does GDP growth require adequate and reliable electricity, but to address the developmental needs of the country sustainable energy provision is a must. For example, developmental backlogs such as housing, urban amenities, and social services increase the country's demand for electricity. In effect, the growing level of urbanisation increases the demand for sustainable electricity. Over the past two decades, South Africa's urban dwellers have risen to 65% of the total population. The need for adequate, reliable and accessible electricity has risen accordingly.

Importantly, the Government's New Growth Path aims at expanding some strategically important sectors within the economy. Significantly, all these sectors are highly energy intensive. The chart below illustrates the key sectors targeted by NGP and Government's Industrial Policy Action Plan (IPAP 2).

South Africa's electricity demand will grow as energy intensive sectors grow over the next decade



Almost 50% of total electricity usage comes from sectors that are either targeted by IPAP and the New Growth Path, or are most likely to contribute to growth in employment. Currently these sectors also facilitate the majority of our export revenue and are crucial to the maintenance of the tertiary sectors contribution to the economy.

Going forward, assuming that NGP and IPAP2 succeed, the SA economy's energy intensity is likely to rise and hence the adequate availability of electricity in the country will be even more critical for socio-economic success.

From a political economy perspective, the most pressing need in the country is the creation of jobs - decent jobs. Job creation without growth and development is impossible, likewise is the growth and development without adequate energy unsustainable. As such, addressing the question of adequate energy is a pre-condition for both the growth and developmental goal of the country.

Cost of supplying a sustainable energy

It is stating the obvious that to provide a sustainable supply of energy more capital investment is needed. Over the years the South African economy has been sustaining itself with the stock of energy infrastructure built before 1994. Thereafter not much investment in the building of more capacity that would cater for the growing demand, arising from higher economic growth and/or developmental needs of a modern economy, was done. The failure to invest adequately has created a real constraint to the growth prospect of the country. However, the need to increase energy capacity in the country has become evident to all stakeholders within the society. In response, Eskom has drawn up a six-year capital investment programme that will increase energy capacity in the country to levels in line with the expected rise in national electricity demand (Table 1).

Table 1: Eskom Capital Expenditure Programme

Capital Expenditure (excl IDC excl Cost of Cover) R'm	FY10/11	FY11/12	FY12/13	FY13/14	FY14/15	FY15/16	FY16/17
Generation	63,249	69,563	53,585	34,955	49,119	77,028	89,827
Transmission	14,533	11,327	16,112	16,667	22,099	23,592	24,392
Distribution	8,654	10,705	12,784	14,893	17,129	20,129	22,187
Corporate (incl ED)	679	372	423	317	366	474	282
Research and Development	851	2,706	3,628	2,275	529	5,630	2,332
TOTAL	87,967	94,673	86,533	69,107	89,241	126,853	139,019
Cumulative	87,967	182,639	269,172	338,279	427,520	554,373	693,392

In the process of achieving a sustainable supply and distribution of energy in South Africa, Eskom will need to finance its capital requirements, generate more revenue in order to be able to finance its required capital expenditure. The options available in financing the required capex include:

1. User charges - increases in electricity prices
2. Government capitalisation of Eskom
3. Private sector investment
4. A mix of all of the above.

Each of these options has its respective pros and cons.

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Increasing User Charges

Financing Eskom's capex requires considerable increases in electricity charges. Sudden and substantial increases, however, lead to disruptions for many business firms that had not anticipated such sharp increases. Furthermore, business operations that are operating at the margins of profitability cannot absorb substantial cost increases, be it electricity or other costs. A good case in point is our marginal gold mining industries, or some of the manufacturing firms that are hard-hit by a mix of currency appreciation and unfavourable global economic conditions. For such firms, it is not the increase *per se* that matters, rather it is the quantum of increases in the short term that leaves them with little or no degrees of freedom to absorb the production cost increases. In such cases, business firms have no option but to scale down operations, lay off workers and in some extreme cases even close down.

Increasing user charges however has distinct benefits too. Key amongst them is the following:

a. It creates a platform for sustainable and reliable electricity generation in the country.

b. It helps set electricity prices at cost-reflective levels. In the long term, this is a pre-condition for an efficient allocation of resources within the economy. The country's dynamic global competitiveness requires that we ensure all resources used are as cost-reflective as possible.

c. Economic stability over the long term necessitates sustainable use of all resources - electricity included.

d. Cost-reflectivity will also open up opportunities for alternative energy options. This in turn will diversify sources of energy in the country, and lead to further stability arising for diversification.

In the following sections of this report we analyse the implications of user charges for the economy and for the various economic sectors, both in the short term and in the long term.

Government Capitalisation of Eskom

This option has its own systemic implications. At face value, if government capitalises Eskom, it reduces the need for raising user charges. So in the short term, the economy operates along its business as usual. However, there are implications for this scenario over the medium to long term. Most importantly, the following issues arise:

I. Government capitalisation of Eskom entails either tax increases or a rise in government debt. Both these developments have a medium to long term distortion impact on the stability of the economy. Whilst the arguments here are complex and interrelated, large scale capitalisation of Eskom will constrain the government's ability in financing key requirements in socio-economic infrastructure.

II. This approach also delays energy charges becoming cost-reflective, and as such it is not favourable for the long term efficient utilisation of the country's resources. Nor is it helpful in promoting the economy's dynamic global competitiveness.

III. Government's adequate capitalisation of Eskom, if it leads to the subsidization of electricity charges, will also entail social welfare implications. It is likely that it will exacerbate the already highly skew distribution of income in the country.

Private Sector Investment

Whilst this option is clearly part of the medium to long term solution, it is constrained by the following factors:

I. There is no guarantee that private sector investment would entail lower increases in user charges. In fact, the contrary might be true, at least in the short term.

II. It is safe to argue that in the short term the regulatory framework for private sector participation is not in place. As such, this option remains a viable one over the medium to long term.

III. In general, private sector investment should be encouraged with a view to diversify the sources of national energy supply. In the process, care should be taken that cost-reflectivity is not compromised and market contestability is encouraged.

A Mix of All Options

In reality, Eskom's capex is partly financed via National Treasury's capitalisation and partly with the help of user charge increases. Whilst politically this might be inevitable, it is important that the key elements of long term sustainability are not undermined in the process.

The impact of electricity price hikes and Eskom's capital expenditure

Given the above background analysis on the importance of the energy sector to the economy and the cost of supplying a sustainable energy to the country, a quantitative impact analysis of the effects of electricity price hikes and Eskom's capital expenditure programme on the economy was carried out. Two basic approaches are used in the analysis, namely:

I. A Time-Series Macro-Econometric (TSME) model and;

II. A Computable General Equilibrium (CGE) model[1].

[1] Detailed analysis of the model specifications and various price scenarios adopted are presented in the integrated reports. Only the results from NERSA price scenarios (TSME model) are presented in this detailed summary. The results from the CGE model are also presented in the integrated report. The CGE results are in tandem with TSME results.

An econometric analysis of the impact of electricity price hikes

The necessity to introduce a series of electricity price hikes over the next few years will have multifaceted negative impacts on the entire macroeconomic system. The economic impact analysis of electricity price hikes illustrates (see Chapter 1 of the integrated report) the adverse impact on major macro variables (i.e. GDP, employment and investment) in the economy.

The simulation results from the TSME model revealed the macro implications of the current wave of electricity price increases. Under the NERSA price scenario, the 25% p.a. increase in electricity prices over a five-year period and 6% p.a. over a further five-year period will have a direct impact on inflation leading to an increase of about 2.82% over the long-run (see Table 2). Given the role played by inflation - linkage between the various segments of the economy - this will lead to declines of about 1.8%, 0.22% and 1.53% in output (GDP), employment and investment respectively.

During the short-run, the impact will be mostly affecting household consumption and exports, mainly due to the direct effect of inflation. Short-run implications of the price hikes in a dynamic model is found not to be very robust due to the slow adjustment processes that are embedded in the economy whereas, in the static system (CGE) robust short-run implications are captured (See integrated report).

Under the various NERSA price scenarios, the impacts become less severe on the macro variables as prices are spread out over a longer period of time (Table 2). In general, the more time the economy has, the better it can adjust. Hence, much of the adverse impact occurs in the short term where business firms have little, if any, scope for process re-engineering and general technological adjustments.

At the sectoral level, the sectors that will shed most jobs in the long-run due to (NERSA: 25% 5yr & 6% 5yr) the hike in electricity prices are; the mining sector (-2.78%), transport & communication sector (-1.21%) and wholesale & retail trade sector (-0.9%). The impact on GDP has a similar trend. These sectors are also the three sectors with the highest energy intensity. The electricity, gas & water sector on the other hand will boost jobs within the sector in the long-run by about 13.85%. This is due to the positive impact that electricity prices will have on the sector's capital investment, growth and job creation. However, the employment impact during the short-run across sectors will be positive except for manufacturing, mining and agriculture (detailed results are presented in the integrated report).

Table 2: Economy-wide Impact of Electricity Price Hikes - NERSA Scenarios

	Employment	Output	Investment	Household Consumption	Real Wages	Exports	Imports	Exchange Rate (R/$)	Consumer Inflation
Long-run									
25% 5yr & 6% 5yr	-0.22% (-18,635)	-1.77% (-R31.5billion)	-1.53% (-R5.9billion)	-2.81% (-R31.5billion)	-1.19% (-R9.5billion)	-0.16% (-R0.65billion)	-3.97% (-R18.8billion)	4.99% (7.7)	2.82% (4.52%)
25% 3yr & 11% 7yr	-0.18% (-15,247)	-1.43% (-R25.5billion)	-1.46% (-R5.6billion)	-2.22% (-R24.9billion)	-0.97% (-R7.8billion)	-0.11% (-R0.44billion)	-3.08% (-R14.6billion)	3.92% (7.59)	2.20% (4.5%)
25% 3yr & 6% 7yr	-0.15% (-12,706)	-1.26% (-R22.5billion)	-1.21% (-R4.7billion)	-1.99% (-R22.4billion)	-0.86% (-R6.9billion)	-0.11% (-R0.44billion)	-2.82% (-R13.3billion)	3.65% (7.57)	2.11% (4.49%)
Short-run									
25% 5yr & 6% 5yr	-0.07% (-5,929)	-0.12% (-R2.1billion)	9.62% (R37.1billion)	-0.37% (-R4.2billion)	-0.14% (-R1.1billion)	-0.35% (-R1.4billion)	-1.72% (-R8.1billion)	6.03% (7.74)	5.04% (4.62%)
25% 3yr & 11% 7yr	-0.06% (-5,082)	-0.11% (-R1.96billion)	6.98% (R26.95billion)	-0.33% (-R3.7billion)	-0.05% (-R0.4billion)	-0.32% (-R1.3billion)	-1.55% (-R7.3billion)	5.21% (7.68)	4.37% (4.59%)
25% 3yr & 6% 7yr	-0.06% (-5,082)	-0.11% (-R1.96billion)	6.80% (R26.26billion)	-0.33% (-R3.7billion)	-0.05% (-R0.4billion)	-0.33% (-R1.3billion)	-1.54% (-R7.3billion)	5.18% (7.68)	4.34% (4.59%)

The long run values are depicted using the Hodrick-Prescott trend value. Negative values represent a decline while positive values represent an increase. Long & short-run actual (in parenthesis) impacts are calculated based on current values.

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Econometric analysis of the impact of Eskom's capital expenditure

Eskom's planned six-year capital investment programme is targeted to boost generation, transmission and distribution of electricity in the economy. Meanwhile, this will have a direct and indirect positive impact on the growth and development of the country. The economic impact analysis of Eskom's capital expansion provided in this report reveals a positive impact on major macro variables (i.e. GDP, employment and investment) in the economy.

Under a dynamic system (model), the 18% increase in capital investment in the electricity sector over a six-year period will have an indirect impact on inflation leading to a decline of about 0.1% over the long-run. This will lead to increases of about 0.07%, 0.01% and 0.06% in output (GDP), employment and investment, respectively (Table 3).

Table 3: Economy-Wide Impacts of an Increase in Eskom's Capital Expenditure

	Long-run	Short-run
Employment	0.01% (847)	0.002% (169)
Output	0.07% (R1.3billion)	0.01% (R0.2billion)
Investment	0.06% (R0.23billion)	1.8% (R6.95billion)
Household Consumption	0.09% (R1billion)	0.004% (R0.04billion)
Real Wages	0.05% (R0.4billion)	0.04% (R0.32billion)
Exports	0%	0.007% (R0.03billion)
Imports	0.07% (R0.33billion)	0.01% (R0.05billion)
Exchange Rate (R/$)	-0.18% (7.28)	-0.12% (7.29)
Consumer Inflation	-0.1% (4.39)	-0.11% (4.39)

The long run values are depicted using the Hodrick-Prescott trend value. Negative values represent a decline while positive values represent an increase. Long & short-run actual (in parenthesis) impacts are calculated based on current values.

On the other hand, similar but more robust impacts are revealed under a static system (CGE). An 18% increase in capital expenditure will, over the long-run, lead to about 0.75% and 0.79% decline in GDP and skilled employment, respectively (See integrated report). The bigger impacts in the CGE model are linked to its static nature. Measured over time the share of investment in the electricity sector relative to total investment in the economy is fairly small.

The positive impacts of the shock are insignificant, due to the relatively small share of electricity investment in total investment in the economy. The price block which serves as a linkage between the different segments of the economy is not directly linked to investment in electricity. However, a weak transmission mechanism of the shock on the macro and sectoral economy is detected in both the short-run and long-run.

At the sectoral level, the electricity sector will boost employment by about 1.5% in the long-run. Impacts on other sectors in terms of job creation will remain negligible. The same trend also applies to the GDP impact but with a higher magnitude (See integrated report).

Net impact of electricity price increases and Eskom's capital expenditure

The electricity price impact analysis reflects negative implications on the macro and sectoral economy, whereas, positive implications on the economy will occur when Eskom's six-year capital investment comes to the fore. However, the magnitude of the price impacts on major variables is found to be higher than those of the capex impacts.

In this regard, the net impact of an increase in electricity prices and Eskom's capital expenditure will continues to be negative on major macro variables (i.e. GDP, employment and investment) in the economy. This can be attributed to the direct effects that electricity prices have on inflation.

The simulation results from the TSME model revealed the net implications of the wave of electricity price increases over the next few years and the six-year Eskom capital expenditure programme (18% annual average) on the macro economy. In the long-run, household consumption, GDP, and investment will continue to be mostly adversely affected by the price hikes. During the short-run, the impact continues to be mostly affected in household consumption and exports, mainly due to the direct effect of the inflation.

At the sectoral level, the sectors that will shed most jobs in the long-run are; the mining sector, transport & communication sector and wholesale & retail trade sector. The same trend also goes with the impact on GDP. The electricity, gas & water sector on the other hand will continue to boost jobs within the sector in the long-run (See integrated report).

Beyond the direct impacts of price increases and capex spend; the secondary impact of creating sustainable energy supply depends entirely on the multiplier effects arising from the establishment of new industries and the general rise in investment trends. As mentioned before, no modern economy can sustain growth and development without an adequate and sustainable energy supply. At the same time, the sufficient conditions for rising investment, growth and development go far beyond the availability of energy. The broader socio-political and regulatory environment has to be favourable for rising investment in various sectors. Therefore, the desired positive effects of investment in the energy sector are contingent on many other factors.

The social outcry against rising electricity charges is in part also due to the intergenerational aspects. To put it plainly, the current generation is forced to pay hefty price hikes, whilst future generations could benefit. In general, democratic societies find it hard to deal with such intergenerational issues.

Impact on poor citizens

Given the importance of energy in the economy, it is expected that any positive or negative shock in this sector will have direct implications for the well-being of the people. However, an inadequate supply or access to energy will undoubtedly continue to trap the marginalised people in poverty as opportunities to create wealth in the economy will be limited. On the other hand, increasing user charges on electricity in order to be able to supply sustainable electricity may be harmful to individuals, households and firms in the economy, particularly those in low income groups.

Based on the econometric results of the static (CGE) model, increasing electricity prices by 25% will impact negatively on household consumption with the poorest households most severely hit. The classification of households is taken from the StatsSA classification (StatsSA 2004).

In the short-run, consumption by the poorest households will decline by about 1.2% while the richest households will reduce their consumption by about 0.6%. In the long-run, consumption by the poorest and richest households will fall further to about 2% and 2.6% respectively. The progressivity of the long-run impact is mainly due to the assumption of fixed skilled real wages (Table 4).

Table 4: Impact of Increases in Electricity Prices and Capex

	Poorest household	Richest household
Long-run		
25% electricity price increase	-2%	-2.6%
18% capex increase	1.2%	1.2%
Short-run		
25% electricity price increase	-1.2%	-0.6%
18% capex increase	1%	0.2%

Simulations from CGE model

With regard to Eskom's capital expenditure programme, the impact of an 18% capex increase will impact positively on household consumption. Poor households will increase their consumption by about 1% in the short-run while the rich households' consumption will marginally increase by about 0.2%. In the long-run, the poor and rich households' consumption will increase by about 1.2% each (Table 4). Therefore, the net impact of increases in electricity prices and capex will remain negative, for both the poor and rich households.

Furthermore, the impact of the increase in electricity prices and capex on the poor can be investigated through the number of jobs created/lost in the process. It is expected that the majority of poor citizens belongs to the semi and unskilled labour force while the majority of the rich are skilled. It is estimated that about 55% of total employment in the country are semi and unskilled and the remaining 45% are skilled. Therefore, 55% of the total jobs lost or created, as presented in Tables 2 & 3 above, comes from the poor population. For instance, about 10,250 jobs out of the 18,635 total job losses (as a result of the 25% 5-year and 6% 5-year price increases) comes from the poor population while about 466 jobs out of the 847 jobs created (as a result of the 6-year 18 % annual capex increase) goes to the poor population. In this regard, the overall net impact will be most severely felt by the poor.

To mitigate this negative impact, NERSA has put in place measures that will soften the burden on the poor. The Inclining Block Tariff (IBT) was promulgated by NERSA as part of the MYPD2 decision. The IBT is a tariff where higher consumption comes at a higher price (NERSA, 2010). This is to ensure that low income (poor) customer enjoy a tariff subsidisation, easy tariff communication as well as retaining Eskom revenue neutrality. Summary of the IBT rates is presented in Table 5.

Table 5: NERSA Approved Inclining Block Tariff (IBT) for Residential Customers

Monthly Consumption level	2010/11		2011/12		2012/13	
	c/kWh	% increase	c/kWh	% increase	c/kWh	% increase
Block 1 (≤50kWh)	54.70	(10.59)	57.65	5.40	60.83	5.50
Block 2 (51-350kWh)	58.48	(5.20)	66.16	13.23	75.09	13.50
Block 3 (351-600kWh)	76.35	21.95	96.05	25.80	120.93	25.90
Block 4 (>600 kWh)	83.74	35.82	105.35	25.80	132.63	25.90
Average residential tariff	60.60		68.83		78.62	

Source: NERSA 2010

Eskom's implementation of the IBT was two-fold:

- For account customers, the above IBT was implemented.
- For pre-paid customers, the weighted average increases - the percent variance between the home light 2009/10 average prices compared to the IBT average prices - was implemented.

The IBT system is seen as an immediate and additional price relief to customers consuming less than 350 kWh per month. This group of people or households are considered by NERSA to be poor. However, this assumption is subject to criticism.