INTRODUCTORY INFORMATION

The IEEE Power & Energy Society (PES) welcomes you to its 2009 General Meeting. The conference, with its theme “Investment in Workforce and Innovation for Power Systems” provides an international forum for attendees to promote, share and discuss a myriad of ongoing developments that relate to today’s power and energy industry.

PES gratefully acknowledges the support of our conference host ALTALINK and our meeting contributors.

Below is a brief overview and of the meeting schedule and a description of each element of the meeting. The descriptions appear here in approximately the same order in which they occur during the meeting. For more details about a particular event, please see the page noted within the text or in this list:

CONFERENCE LOCATION

The 2009 General Meeting will be held 26-31 July in Calgary (Alberta) Canada in the Calgary Telus Convention Centre and in three conference hotels: the Hyatt Regency Calgary, the Calgary Marriott and the Fairmont Palliser.

Schedule Overview and Events

**Attire:** Attire for the conference is business casual. No denim jeans or shorts in the technical sessions or committee meetings, please.

*Note: A limited number of sessions and events (in particular, some committee meeting) may fall outside this schedule. *Tours, luncheons and dinner theater are optional with limited capacities; they require an additional fee and tickets for admittance.*

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**REGISTRATION AND INFORMATION**

Macleod Hall Pre-Function Area  
Calgary Telus Convention Centre, South Building, Lower Level

- **Sunday 26 July**: 9:00AM - 8:00PM
- **Monday 27 July**: 6:30AM - 7:00PM
- **Tuesday 28 July-Thursday 30 July**: 6:30AM - 4:00PM
- **Friday, 31 July**: 6:30AM - 12:00PM
Note: On-site registration for the PES/CIGRE Joint Meeting will begin on Thursday, 30 July.

All attendees are required to register for the 2009 General Meeting and pay the appropriate fee in order to participate in any aspect of the meeting.

Pick up your advance registration packets, register on-site, purchase tickets for luncheons or companion and leisure events (if there are still some available), ask questions at the registration and information counters.

**Conference Proceedings:** All registrants for the technical program are entitled to one copy of the Conference Proceedings on a USB flash drive which you will receive with your registration packet. Additional copies of the Proceedings on flash drives will be available for sale during the meeting in the Paper Market located in the Macleod Hall Foyer at the Convention Center and after the meeting through IEEE Customer Service (http://www.ieee.org).

**INCLUDED WITH REGISTRATION**

**Delegate registration fees include:** Continental breakfasts Monday-Thursday, welcome reception Sunday evening, full technical session and committee meeting program, one copy of the meetings proceedings on a “memory stick”, the opportunity to participate in any of the available optional events open to registrants only, at the prevailing registrant rate.

**Companion registration fees include:** Continental breakfasts Monday-Thursday in the Companion Lounge, welcome reception on Sunday evening, Poster Session and Fellows Reception on Monday evening, companion lounge Monday-Thursday, the opportunity to participate in companion tours and any of the other available optional events open to registered companions at the prevailing registered companion rate. Companions are not admitted to technical session nor do they receive a copy of the proceedings.

**Student registration fees include:** Continental breakfasts Monday-Thursday, welcome reception Sunday evening, full technical session and committee meeting program, participation in the student program, Student/Faculty/Industry Luncheon on Wednesday at registered student rate, one copy of the meetings proceedings on a “memory stick”, the opportunity to participate in any of the available optional events open to registrants at the prevailing registrant rate.

**IN AND AROUND THE REGISTRATION AREA**

**PES and IEEE Displays:** Tables with literature and materials about PES and IEEE membership, programs, publications and future meetings

**Message Center:** A bulletin board where you can find last-minute changes to the meeting program or room assignments, and leave message for other attendees.

**Paper Market:** Preprints of the Transactions papers presented during the meeting, copies of the meeting’s proceedings and special publications/tutorials will be available for sale.. Please check on-site for hours and exact location.
NEW ATTENDEES ORIENTATION SESSION
Sunday 26 July  3:00PM and 4:00PM  Macleod Hall E1 (CC)
A short orientation session will familiarize first-time attendees with PES General Meetings. The session will be offered twice. Each session will provide an understanding of the various types of technical sessions, committee meetings, technical inspection trips, and social events. At the end of a session, the newcomer should be able to navigate confidently through the General Meeting and obtain maximum value from the experience. Each session will include a question and answer period.

WELCOME RECEPTION
Sunday 26 July  6:00-9:00PM  Heritage Park (transportation provided)
Take this opportunity to renew old acquaintances and meet more members of the power and energy community. Heritage Park is a “living history museum”, where you will get to experience first-hand the history of Western Canada beginning from the 1860s. (http://www.heritagepark.ca/). Enjoy a complimentary light supper buffet of hors d’oeuvres and a cash bar. Attendee or Companion badges are required for entrance to the reception. Shuttle buses leaving from the Telus Convention Centre will start at 5:45 PM and run round trip all evening.

ATTENDEE BREAKFASTS
Monday 27 July  7:00AM – 7:50AM  Macleod Hall D (CC)
Tuesday 28 –Thursday 30 July  7:00AM – 8:30AM  Macleod Hall D (CC)
Complimentary continental breakfasts for all conference registrants will be available Monday through Thursday. Note that breakfast is not offered on days other than these.

Presenters must attend a special breakfast on the day of their sessions. Please see PRESENTER information below for details.

PES MEMBERS MEETING
Monday 27 July  8:00-9:00 AM  Macleod Hall ABC (CC)
PES President Wanda K. Reder will provide an update about PES progress and activities of the past year. Candidates for the PES offices of President-Elect, Secretary and Treasurer will each make a short presentation of their individual views and goals so you can make an informed decision when you vote during the PES elections later this year. (Meet the candidates at a reception that will be co-located with the Monday Night Poster Session - see below for further information.)

PLENARY SESSION
Monday 27 July  9:00-11:00AM  Macleod Hall ABC (CC)
PES President Wanda K. Reder will moderate the Plenary Session which begins immediately following the Members Meeting. The keynote speaker will be Kurt E. Yeager, retired President and Chief Executive Officer of the Electric Power Research Institute (EPRI). Mr. Yeager is currently Executive Director of the non-profit Galvin Electricity Initiative. His talk is entitled “The Path to Perfect Power”

COMMITTEE MEETINGS

Most administrative and technical committee meetings are scheduled for Monday 11:00 AM (following the Plenary Session) through Thursday afternoon. Some additional committee meetings are scheduled on Saturday and Sunday, 25 and 26 July. The complete listing of committee meetings can be found at http://submissions.miracd.com/pesgm2009/Itinerary/login.asp. Updates to this program will be posted in the Registration area at the Convention Center or provided on an errata sheet.

TECHNICAL SESSIONS AND OTHER TECHNICAL EVENTS

A complete listing of all technical sessions including an abstract of each event and papers presented during the session can be found at http://submissions.miracd.com/pesgm2009/Itinerary/login.asp. Updates to this program will be posted in the Registration area at the Convention Centre or provided on an errata sheet.

Technical meetings are planned for Monday afternoon and evening and all day Tuesday, Wednesday and Thursday. The following types of sessions are scheduled.

Super Sessions: a series of presentations in composite sessions designed to fully explore topics from different perspectives. Experts from several PES technical committees will address subjects that are of significant interest to the profession:

- Transmission Capacity Enhancements in the 21st. century
- Wind Power- Real or Imaginary
- Regulatory and Public Challenges to Utility Enhancements
- Going “Green”
- Integrating Distributed Generation
- Smart Grid
- Training Future Workforce for the Electric Power and Energy Industry

Panel Sessions: Invited papers on a wide variety of noteworthy subjects

Paper Sessions: Presentation of high quality papers on many issues of significance to energy and power professionals

Paper Forums: Multiple authors present brief overviews of their quality papers followed by time for a discussion with the individual author(s) of your choice.

Poster Session: A Monday evening special event with hundreds of authors representing all aspects of the industry, each presenting a poster version of his/her paper. Enjoy hot and cold hors d’oeuvres and beverages as you browse the posters and discuss the papers one-on-one with their authors
**Tutorials:** The Power & Energy Education Committee will present five full-day and one half-day tutorials during the meeting. Classes are taught by eminent professionals in the field. Earn PDHs and CEUs for your attendance (see below for an explanation of CEUs and PDHs). Full or one-day conference registration plus an additional fee is required in order to attend any of these courses. For complete information about the tutorials, see [http://submissions.miracd.com/pesgm2009/Itinerary/login.asp](http://submissions.miracd.com/pesgm2009/Itinerary/login.asp). Courses include:

- Fundamentals of Wind Energy
- Gas Insulated Substations
- Understanding Power Electronics for Integrating Renewables and Storage into the Grid (half-day)
- Secondary Power Distribution Network
- Substation Automation
- Voltage Stability

**Technical Tours:** Two half-day Inspection trips are offered twice each. Advance registration is required for all tours so that security clearance can be obtained for each individual. *There will be no onsite technical tour registration.* Early registration is recommended since tours seats are limited, and all tours are first come, first served. Valid photo ID must be presented at the beginning of each tour. The fee for each tour is $40.00 US. See below for details:

Destinations include:

- Calgary Energy Center
- Bow River Hydro Facilities

**MONDAY NIGHT POSTER SESSION, RECEPTION and STUDENT POSTER CONTEST**

*Monday, 27 July    5:00-7:00PM    Hall DXE (CC)*

A popular feature of the PES General Meeting technical program is the Poster Session, where papers from each represented committee and all topics will be presented. The Student Poster Contest will be co-located with the Poster Session. A complimentary light supper buffet will be served and cash bar will be available. Attendee or Companion badges are required for entrance to the Poster Session. *(The Candidates’ Reception and the New Fellows Reception are co-located with the Poster Session)*

**CANDIDATES’ MEET & GREET RECEPTION**

*Monday, 27 July 5:00-7:00PM    Hall DXE (CC) (co-located with the Poster Session and Candidates’ Reception)*

Take this opportunity to speak with the candidates for the 2010-2011 term of PES President-Elect, Secretary and Treasurer. This is your chance to discuss the future of PES with the 2010-2011 Society leaders. *(The Candidates’ Reception is co-located with the Poster Session and the New Fellows Reception)*
NEW FELLOWS RECEPTION

Monday, 27 July  5:00-7:00PM  Hall DXE (CC) (co-located with the poster session)

A part of PES's recognition of extraordinary achievements in the technical and professional of energy and power, you are cordially invited to stop in and congratulate the IEEE Fellows elected to the class of 2009 who are members of PES during the reception held in their honor. (The New Fellows Reception are co-located with the Poster Session and the Candidates’ Reception)

AWARDS CEREMONY AND LUNCHEON

Tuesday 28 July  Noon-2:00PM  Imperial Ballroom 4,6,8 (Hyatt) $40

Join us for a banquet luncheon where IEEE and PES award winners are honored for their outstanding achievements. Tickets are US$40 on-site. Vegetarian meals are available upon request. Seating is limited.

NETWORKING RECEPTION  Hosted by PES and IEEE WIE

Tuesday 28 July  5:30-6:30PM  Imperial Ballroom 1 (Hyatt)

All are invited to attend this complimentary informal reception held to encourage networking between industry, government and university participants. Hosted by the PES Society and IEEE Women in Engineering Committee. Light refreshments

STUDENT PROGRAM

An exciting student program for IEEE PES Student Members, including a social event, the Student/Faculty/Industry luncheon which includes a Job Fair, and a Poster Contest is planned. Student members are invited to participate in all other aspects of the General Meeting as well. Students must register for the meeting ($70 before 30 June, $95 otherwise) prior to registering for the student program, for which there is no additional charge. Students must be prepared to verify their status by providing their IEEE Membership number when requested.

STUDENT FACULTY INDUSTRY LUNCHEON AND JOB FAIR

Wednesday 29 July  Luncheon:  11:45-1:00PM Imperial Ballroom 4,6,8 (Hyatt)

Job Fair:  1:00-2:30PM following the luncheon

Student/Faculty/Industry Luncheon:  Attend a luncheon designed to bring together students, faculty advisors and industry representatives. The winner of the T.Burke Hayes award and the student prize papers will be honored. All meeting registrants are invited to purchase tickets and join the luncheon as
long as there are seats remaining. Attendees of the General Meeting who are registered as IEEE PES Students (and their advisors who are meeting attendees) may obtain tickets at special discounted prices. Seating is limited. Please check with the registration desk for details and to check availability.

**International Job Fair for Students:** For the first time at a General Meeting, luncheon attendance enables employers and university graduate and undergraduate students to participate in an International Job Fair for Students. This job fair will provide a forum for employers and students who share a common interest in the power and energy industry to meet and discuss career opportunities. It enables one-to-one conversations between company engineers or recruitment professionals and students who will soon be in the job market. Students will sit with a potential employer during lunch. After lunch, students may circulate among recruiting tables for further conversations. *Attendance at the job fair is limited to those holding tickets for the luncheon.*

**COMPANION/LEISURE ACTIVITIES**

*Access to the activities described below is limited to registered companions and registered children.*

Registered companions are invited to mingle and relax in the Companion Hospitality Lounge that will be located in the Penthouse at the Palliser Hotel. Complimentary breakfast will be served Monday through Thursday from 7:00-9:30 AM. The lounge will be the gathering point for all companion tours. For those not participating in a tour, a number of fun and interesting short programs and activities will be held in the lounge during the week. Internet service will be available to allow you to keep in touch while away from home.

The lounge will be staffed daily for information about tours, local transportation, points of interests/attractions, things to do with children or on your own, shopping and local advice and be a place to relax between activities. Please check on-site for lounge hours. Details of companion activities will be posted in the companion room for reference. A companion’s badge is required for admittance. Each child must have a children’s badge and be accompanied by an adult registered companion when in the Lounge.

A full program of optional tours and activities has been planned for registered companions. Descriptions for the all day excursions and half-day in-city tours follow in chronological order. Children are welcomed on most of the tours, but must be accompanied by a parent. A companion or children’s badge is required in order to participate. Please visit the registration desk to check availability and purchase tickets.

All tours will depart from the Palliser hotel. Please arrive at the companion lounge at least 15 minutes prior to the posted start time.
**Calgary City and Canada Olympic Park Tour**

Sunday, 26 July and Monday 27 July 8:30AM-12:30PM
US$55.00 (includes professional guide, transportation, snacks on route)

This tour will give you an overview, from past to present – starting with its historic origins at Fort Calgary through to its modern cityscape of high-rises, headquarters for Canada’s oil and gas companies. On this tour you will take in Eau Claire Market, China Town, the Calgary Tower, Glenbow Museum and Olympic Plaza, City Hall, Stephan Avenue Mall and more. Well-known for its competitive spirit, Calgary boasts world-class sporting facilities, the Pengrowth Saddledome (home of the Calgary Flames), Talisman Centre, Olympic Speed Skating Oval and Canada Olympic Park. A visit to this western city would not be complete without the Calgary Exhibition and Stampede photo stop.

Canada Olympic Park, site of the 1988 Winter Olympics is a must-see! You will visit the Olympic Hall of Fame and Museum; 90m Ski Jump Tower; Ice House; bobsled, luge and skeleton-sled track; and ride the chair lift on a guided tour. The Olympic Oval, where speedskaters race on the fastest ice in the world, will be the last stop.

*Vehicles for this tour are not wheelchair accessible, though the Olympic Park attractions are wheelchair accessible with assistance.*

**Painting an Albertan Landscape**

Monday 27 July, 2009 12:30-5:30PM US$95 includes transportation, watercolor supplies, instruction, refreshments and sweeties.
Ages 15 years and up

Come spend a relaxing, fun-filled afternoon in the beautiful suburb of Deer Run in the studio of native Albertan artist Donna Nemrava. Leave with your very own watercolour painting of an Alberta grain elevator. These historic sentinels have all but vanished from the prairie landscape. For the last one hundred years prairie grain elevators have been a vital part of the western Canadian economy, landscape and culture. But just as progress once brought the grain elevator to the Canadian prairies, progress has now decreed that these structures no longer serve a viable purpose. One after the other, prairie grain elevators are being torn down and are just a memory of a once proud Canadian prairie tradition.

The artist will supply all the art materials needed for the class as well as coloured copies, instructions and a pre-sketched picture on watercolour paper. Tea and sweets will be served. All skills levels are welcomed. The Alberta Grain Elevator is a beginner level piece and should be able to be completed in the 4 hour class. For more information on the artist and her gallery, please see [http://art.escape.tripod.com/](http://art.escape.tripod.com/)

*Attendees should be prepared to walk one flight of stairs to the artist’s studio. Attendance is limited to 10 people. Not wheelchair accessible.*
**Wind Farm/Head-Smashed-In Buffalo Jump (joint leisure/technical tour)**

Monday 27 July  8:00AM – 4:30PM  US $110.00 (includes transportation, mid morning snacks, bottled water and lunch)  (children 2-12 yrs US$55)

The coach will drive you through the Kettles Hill Wind Farm, which is located near Pincher Creek, Alberta and is comprised of 35 Vestas turbines with a current capacity of 63 MW. The wind farm has potential for a further 77 MW. ENMAX Energy Green Power Inc., a wholly-owned subsidiary of ENMAX Energy Corporation, acquired the wind farm in June 2008. Through subsidiaries, ENMAX Energy is one of Alberta's largest investors in renewable energy with partial ownership of the McBride Lake Wind Farm and complete ownership of the Taber and Kettles Hill Wind Farms. ENMAX Energy was the first Canadian electricity retailer to offer customers the option to support wind-generated energy.

Located 18 km north-west of Fort Macleod, Alberta, Canada, at a place where the foothills of the Rocky Mountains meet the Great Plains, is the world's oldest, largest and best preserved buffalo jump. A buffalo jump is a cliff or steep bank over which herds of buffalo were driven to their deaths so the meat, hides and bones could be harvested. Aboriginal peoples of the plains used Head-Smashed-In continuously for more than 5,600 years until the mid-1800's. In 1981, the United Nations Educational Scientific and Cultural Organization (UNESCO) designated the jump as a World Heritage Site. For more information on Head-Smashed-In Buffalo Jump, please visit their website: [http://www.head-smashed-in.com/](http://www.head-smashed-in.com/)

*Bring comfortable shoes along with a sweater/jacket to enjoy the site’s museum and the outdoor sights at one’s own pace. Many elements of the tour are wheelchair accessible.*

**Banff and Canadian Rockies**

Tuesday 28 July  8:00AM-5:30 PM  $110.00 (includes transportation, mid morning snacks, bottled water and lunch)  NOTE: Gondola lift to Sulfur Mountain is US$23 additional, payable on-site.  (children 2-12 yrs US$55)

A full day excursion takes you from the city into the Canadian Rockies through Alberta's foothills and ranching country to Lake Louise and the resort town of Banff in the Rocky Mountains. Lake Louise is referred to as Canada's "Diamond in the Wilderness," and the "Hiking Capital of Canada". The trip will allow time for one to walk around the lake or just relax at the Fairmont Chateau Lake Louise. On arrival at Banff National Park, Canada's first national park, a brief tour will take you to Tunnel Mountain and the Bow River. The Bow River is a mountain river originating from the Bow Glacier.

Banff is a one of Canada's most popular destinations because of its spectacular mountainous surroundings and hot springs. Banff Gondola is located just 5 minutes from the Town of Banff, on the shoulder of Sulphur Mountain. Safely seated in 4 passenger gondola cabins, those who opt to purchase a ticket to ride the Banff Gondola are transported in 8 minutes to the summit at an elevation of 2,281m (7,486 ft) above sea level. The 360° view
from the upper gondola terminal, view-decks and Summit Ridge interpretive boardwalk, is unsurpassed.

The upper terminal offers restaurant options, a gift shop and a spectacular roof top observation area with information providing directions and distances to major cities of the world and commemorating the area's designation as a UNESCO World Heritage Site.

Hike the Banff Skywalk. There are more view decks on the main level, as well as the start of a 1km long elevated skywalk that leads visitors along Sulphur Mountain's summit ridge to the Cosmic Ray Station National Historic Site of Canada, and the historic Sanson's Peak Meteorological Station if time permits. Then return to Banff for free time before leaving for Calgary. Bring walking shoes and a sweater for easy walking or hiking by the lake, or just relax and enjoy the scenery in one of many restaurants in Banff and Lake Louise. Many elements of the tour are wheelchair accessible.

**Calgary City - Historical Walking Tour**

**Tuesday 28 July 9:00-11:30 AM $20.00 (includes an experienced guide, interesting facts and stories about Calgary, highlights such as Stephen Avenue, China Town and Calgary City Hall, and a surprise gift)**

The city of Calgary is steeped in excitement and lore of the Old West. Long before there were any buildings, the confluence of the Bow and Elbow Rivers was the gathering place of the Blackfoot, Sarcee and Stoney Indian tribes.

In 1875, a North-West Mounted Police fort was built on the banks of those rivers. The first commander, Colonel James Macleod chose the Scottish “Calgary” as the fort’s official name, derived from the Gaelic meaning “clear running water”. The Mounties’ presence, along with the establishment of the Canadian Pacific Railway through the area in 1883 provided the impetus for the incorporation of the town of Calgary in 1884 and its subsequent dramatic and unique development in the 125 years that have followed.

Stephen Avenue (or 7th Avenue downtown as it is known today) teams with ghosts of cowboys, native Indians, cattle barons, oil and gas czars, fortune seekers, and those most Canadian of heroes, the dashing red-coated Mounties.

Since this is a walking tour through city streets and sidewalks, comfortable footwear is recommended. Wheelchair accessible.

**The Bernard Callebaut Chocolate Factory**

**Tuesday 28 July 9 -11:30 am US$25 (includes transportation)**

Ages 6 years and up

Bernard Callebaut, a descendant of the Callebaut family of Wieze, Belgium, is a chocolatier who has been based in Calgary Alberta and has redefined chocolate for an entire generation of Western Canadians for more than 25 years. Done to Bernard's own specifications, the chocolate is a premium blend
of high cocoa and cocoa butter content and lower than normal sugar content. Callebaut has handcrafted more than a thousand different delicious chocolate delicacies and is continually creating more.

The tour involves a walk down the viewing gallery. The gallery overlooks the factory floor through a series of picture windows. Learn about the various pieces of equipment and have any actual production taking place at the time explained. In addition, explore the origins and history of cocoa and chocolate, the processing methods and the creation of Callebaut fine chocolates. There are a series of wall plaques in the viewing gallery which help to explain these themes.

*Please wear comfortable shoes for the tour. Wheelchair accessible.*

**Drumheller Dinosaur and Winery**

*Wednesday 29 July 8:00AM-5:30 PM US$110 (includes transportation, mid-morning snacks, bottled water and lunch) (Children 2-12 yrs US$55)*

See the historic sites as you travel through the "Alberta Badlands". The Dinosaur Trail, a network of roads, takes you around the Red Deer River Valley to uncover the man-made and natural wonders of Alberta's Badlands. As you approach Drumheller, the rolling hills suddenly drop off hundreds of feet into mysterious winding canyons. Strange land formations rise up on all sides; sculpted by wind and water into hauntingly beautiful shapes sunbathed in terra cotta, bronze and amber.

Travel along the Canadian Badlands Trail with a brief stop at Horseshoe Canyon, Canada's mini-Grand Canyon — a picturesque pocket of badlands amidst the prairies.

On the Dinosaur Trail, in the town of Drumheller, murals of dinosaurs decorate scores of historic buildings. At one end of Main Street, right on the banks of the Red Deer River, is the world's largest fibreglass Tyrannosaurus rex, where 106 stairs lead you straight into the beast's mouth.

Heading out on North Dinosaur Trail is the *Royal Tyrrell Museum of Palaeontology*, arguably the finest dinosaur museum in the world. For more information on Tyrell Museum, please go to the following website: [http://www.tyrrellmuseum.com/peek/](http://www.tyrrellmuseum.com/peek/)

Named for Joseph Tyrell who discovered the bones of Albertasaurus (a cousin of the Tyrannosaurus Rex) in 1884, today the museum has more than 120,000 specimens and 35 dinosaur skeletons. The museum features displays of some of the best fossils in the world, plus entertaining interactive exhibits for children and many other attractions.

Deep into the heart of Alberta's 'Badlands' is the hamlet of Wayne. There's only one way in to Wayne, tucked away in the spectacular Drumheller Canyon in Southern Alberta: across ten wood and iron single-lane bridges that span
the meandering Rosebud Creek. On this four mile lonely stretch of road, between Rosedale and Wayne, you will travel to what's left of this legendary ghost town. Once the centre of the bustling coal-mining industry in southern Alberta, Wayne is now home to thirty residents and the historic Rosedeer Hotel and Last Chance Saloon.

The hamlet of Wayne is one of the Badlands’ quirkiest places. Every summer hundreds of Harley Davidson riders meet there for the Wayne Rally. Its Last Chance Saloon is one of Alberta's only operating cowboy relics. The walls of the 70-seat bar are covered in local memorabilia, corny jokes, old bottles, and bullet holes. This evocative interior has been the setting for movies, beer commercials, and a Northern Pikes music video. Enjoy a steak barbecue lunch, featuring 12 oz AAA Alberta beef with all the trimmings at the Last Chance Saloon. This Cowboy saloon offers you an authentic experience, both of the turn-of-the-century and of the modern cowboy, a man as likely to be found driving a pickup into a gas plant as riding a horse into a corral. You really can't get more Albertan than that!

Then on to Atlas Coal Mine, East Coulee. This mine is one of the most complete mining museums in Canada, preserved as a historic site after the mines were closed. This attraction features Canada’s only remaining surface tipple, the spot where coal was poured after being extracted from the earth.

On the way back to Calgary, taste the wines of Field Stone Fruit Wines, Alberta's first cottage winery, opened in July of 2005. All wines are 100% produced from their crops of raspberries, strawberries, wild black cherries and Saskatoon berries.

For more information on the winery, please go to the following website: http://www.fieldstonefruitwines.com/.

For this tour bring your camera and comfortable shoes to enjoy the museum and the sights at one’s pace. There is storage on the bus for a collapsible wheelchair, but one needs to be able to climb the steps of the bus. Many elements of the tour are wheelchair accessible. Wheelchairs are available for rent at the Royal Tyrell museum.

**Big Rock Brewery**

*Wednesday 29 July  1:00- 4:30 pm  US$50 (includes transportation, tasting, custom 6-pack)*

Minimum age 18 years. Please be prepared to show ID.

Visit Big Rock Brewery for a look at the inner-workings of an Alberta Company that has been brewing up beers for decades.

Beer from Big Rock is brewed using only four ingredients: malted barley, hops, yeast and water. The beer has an all natural flavour and is free from preservatives. The founder of the brewery, Ed McNally, started Big Rock to create a premium, natural, unpasteurized beer. His own knowledge, accrued as a former barley farmer, has helped the brewery maintain the extremely high
standards held by the Bavarian Purity Law, first implemented in 1516.

A tour of the Big Rock Brewery Big Rock includes a walk around the brew house’s fermentation, filtration and packaging areas. Then everyone gets to try Big Rock’s family of beer. To finish off the adventure and truly understand the process, everyone creates a 6-pack of their favourite beers to take home.

For more information on the Brewery, please check out the website: http://www.bigrockbeer.com

Please wear comfortable shoes for the tour as there are a number of stairs that need to be walked to see the entire brewery. Not wheelchair accessible. Although the tour of the brewery is not wheelchair accessible, the beer tasting (and an available restaurant) is accessible.

**Private Wine Tasting** (a special, no-charge bonus activity)

Wednesday 29 July       2:00 - 4:00 PM          Minimum age 18 years. Please be prepared to show ID
Cellar Tasting Room,    Under First & Stephen SW,   #100, 137 - 8th Avenue SW,  Calgary, Alberta    T2P 1M9

At this customized sit-down tasting, guests will be able to learn about and enjoy a selection of wines and cheese. A wine expert will present each one and discuss the comparisons between the different wines. Tasting notes will also be provided for the guests in attendance. A selection of cheeses will be available for the guests to eat as the tasting is taking place. A 10% discount will be offered to those guests who would like to purchase any wines. *(Note: be sure to research the rules regarding transporting alcohol to applicable countries if you are planning to take the wine out of the Canada.)*

The participants will meet in the Companion’s Lounge for the walk to the Cellar, approximately one block from the Palliser Hotel. The Cellar is wheelchair accessible with advance notice; please notify the tour escort upon arrival at the companion lounge prior to the tour so elevator access can be arranged.

http://cellarwinestore.com/contact-us.html  Visit the web site to see a map of the downtown area showing the location of the Cellar.

**Murder Mystery Dinner Theatre**

Wednesday 29 July  6:30 - 11:00 pm       US$80 (includes 3 course dinner, two glasses of wine, and the murder mystery)
Minimum age18 years. Please be prepared to show ID if requested.

Location: Catch Restaurant, 100 8 Avenue Southeast, Calgary

Murder mysteries are fun, unique, intimate dinner theatre. It’s your job to play Master Detective and try to sort out the lies from the truth, the red herrings from the red wine and the guilty from the innocent, in order to deduce whodunit!
The secret of enjoying a “Murder Mystery” is attention, observation and participation. Listen closely, get involved with other guests, exchange clues and ideas, ask the suspects questions, and most importantly – have fun!!

The Catch Restaurant is approximately a block from the Palliser Hotel (no transportation provided). The restaurant is wheelchair accessible.

PLAIN TALK COURSES FOR THE NON-POWER ENGINEERING PROFESSIONAL

Since the Plain Talk courses are a co-located event rather than a part of the General Meeting, conference registration is not required to attend any or all of the Plain Talk classes. The fee to register for the courses on-site is $2,150 US for all three, $1,510 US for two and $795 US for one day. The course fee includes continental breakfast and lunch and all course materials.

Power System Basics — Understanding the Electric Utility Operation Inside and Out

Tuesday, 28 July, 7:30 a.m.–5:00 p.m. Imperial Ballroom 5 (Hyatt)

The focus of this course will be on providing a thorough foundation in electric power systems, planning, operations and economics and various regulatory frameworks. Basic electrical terminology will be explained in simple to understand language with regard to design, construction, operations and maintenance of power plants, substations and transmission and distribution lines. Anyone who is not a professional power engineer and involved in the decision making process within the electric utility environment can benefit from attendance at this course.

Delivering Power to the Customer — Understanding the Planning and Operation of Today’s Distribution System: Substations and Radial Lines

Wednesday, 29 July, 7:30 a.m.–5:00 p.m. Imperial Ballroom 5 (Hyatt)

Attendees will receive a thorough briefing and understanding of the issues associated with the planning, engineering, design, operation, and automation of electrical distribution systems. This course is intended for those who are not familiar with the delivery of electricity to the end user. Topics include: The function of the distribution system and its place in the electric delivery system, engineering design and operation issues, historical development, the distribution system in North America and in other countries, distribution planning considerations: the long and short range issues, and distribution and distributed generation.

The Grid — The Interconnected Electric Bulk Power System

Thursday, 30 July, 7:30 a.m.–5:00 p.m. Imperial Ballroom 5 (Hyatt)

This course is intended for anyone interested in gaining a deeper understanding of how the interconnected electric bulk power systems in the United States or “grids” work. This would include economists, attorneys and other non-technical professionals, as well as engineers and technically educated personnel. It should be particularly relevant for market participants,
since a better understanding of the grid and how it functions will lead to more efficient use of resources and avoidance of unnecessary costs.

INFORMATION FOR PRESENTERS

**Presenter Breakfasts**

**Monday 27 July**
6:45-7:45 AM  
North Exhibit Hall C (CC)

**Tuesday – Thursday 27-30 July**
6:45-7:45 AM  
Macleod Hall C (CC)

Presenters, authors, panelists and session chairs MUST meet at breakfast the day of their session to discuss session arrangements. Attendance is required. All presenters should have received e-mails providing the dates of their breakfast.

**Audio-Visual Equipment Provided and Presenters Preparation Room**

**Technical session rooms** will be equipped with an LCD projector and screen. Larger rooms will have a sound system and microphone. Speakers who wish to use a computer during their presentation are required to provide their own laptop computers and are responsible for ensuring compatibility with on-site equipment.

**Committee meeting rooms** will be equipped with only a flip chart and markers unless special arrangements have been made in advance.

**The Presenter Preparation room** (located in the Paper Market area) will be equipped with an LCD projector with the same specifications and compatibility as those in the Technical Session rooms. The equipment is provided to allow presenters to become familiar with and to ensure that their laptop computers are compatible with on-site equipment. Please check on-site for hours and accessibility.

TECHNICAL PROGRAM

**PDHS AND CEUS FOR ATTENDEES**

**Professional Development Hours (PDHs)**

Continuing professional education for licensed engineers is measured in Professional Development Hours (PDH) in some parts of the US. A PDH is one contact hour of instruction or presentation. Currently, thirty states mandate Professional Development Hours to maintain P.E. licensure, each with varying requirements.

CEUs readily translate into PDHs (1CEU=10 PDHs), though PDHs do not convert automatically to CEUs.

The licensee is responsible for maintaining records to be used to support PDH credits claimed. PES does not track this information, and no certificates are...
provided. At many PES meetings, forms are readily available that can be completed by attendees of any session and signed by the session chair to verify attendance. The **completed forms are to be retained by each attendee. They are not submitted to IEEE!** It is up to each licensee to provide the forms to the certifying body or employer, and to determine if a specific course or program fills the needs of the discipline for which the PDHs are intended. Unlike the procedure for CEUs, the IEEE does not pre-approve a course for PDHs.

PDH forms will be available at the Registration Desk and other locations throughout the conference for the use of conference attendees.

**Continuing Education Units (CEUs) offered by IEEE**

*All tutorials offered during the PES General Meeting offer CEUs. Attendees at full day tutorials earn 0.8 CEUs for each course while those at the half-day tutorial earn 0.4 CEUs. Attendees of Plain Talk earn 0.6 CEUs per full-day class.*

A Continuing Education Unit (CEU) is ten contact hours of participation in an organized continuing education experience under responsible, qualified direction and instruction. A unit generally consists of courses of study that refresh, update and enhance knowledge, skills and experience of professional personnel.

Providers of CEUs must be approved by an accrediting body within a jurisdiction such as state/province or country. IEEE is an Authorized Provider of CEUs through The International Association of Continuing Education and Training (IACET), and has adopted IACET guidelines and criteria for all its continuing professional development programs. Authorized Providers of the IACET must reapply every five years and undergo a rigorous assessment to maintain their status.

IACET-approved CEUs are accepted by accrediting bodies in every state within the US and by most other countries; therefore, certification of IEEE CEUs by individual states and countries is not required. If IEEE is not included on a US state’s list of approved CEU providers, it is because the listing is of CEUs providers specifically certified by the state and does not include the names of the more global IACET CEU providers.

Any course that offers CEUs which is presented by an IEEE entity has been reviewed and approved according to standards set by IACET. All registered students who complete an IEEE course offering CEUs will receive a certificate from the IEEE attesting to the CEUs earned by the attendee.

It is up to each student to determine if a specific course or program fills the needs of the discipline or certifying body for which the CEUs are intended.

**Technical Tours**

*Technical tours are a unique element of the PES General Meeting technical program. This year, three tours are being offered, one a combined technical and leisure tour. All tours depart from the Telus Convention Centre. Please*
arrive 15 minutes earlier than the posted departure time. Advance registration required. There is no on-site registration for technical tours.

**Calgary Energy Center**

**Tuesday 28 July**  
8:30 am - 12:30 pm  
US $40

**Wednesday 29 July**  
8:30 am - 12:30 pm  
US $40

Calgary Energy Centre is a 300 MW Combined Cycle Power Plant. It comprises a Siemens Westinghouse W501F Gas Turbine capable of 180 MW with a Nooter Erickson HRSG (Heat and Recovery Steam Generator) 3 stage steam pressure and 120 MW Fuji Condensing Steam Turbine. The base load rating is 250 MW with 50 MW additional power made up with Duct Firing on the HRSG and PAG (Power Augmentation) on the Gas Turbine. It has a 7 Cell Marley Cooling Tower. The power leaves the Station at 240KV and is distributed to the Alberta Grid through the ENMAX Beddington Substation. The commercial date of operation was March 2003. The plant is located in North of Calgary, about 40 minutes drive from the conference hotels.

**TransAlta Hydro Facilities on Bow River**

**Tuesday 28 July**  
12:30 - 5:30 PM  
US $40

**Wednesday 29 July**  
12:30 - 5:30 PM  
US $40

Horseshoe and Kananaskis run-off-river hydro plants are two of the four TransAlta’s hydro facilities on the Bow Mainstream System, which is part of the Bow River Electric System. Commissioned in 1911 and 1913, respectively, these two plants are among the oldest plants still operating in Alberta and present a unique part of hydro power generation history. With a capacity of 14 MW and 20 MW, respectively, the plants are part of the more than 800 MW hydro facilities owned by TransAlta, which provide electricity mainly during the peak hours. Kananaskis plant has two vertical Francis turbines and one vertical propeller turbine. Horseshoe plant is equipped with four horizontal double runner Francis turbines. The facilities are located in beautiful Kananaskis in the Rocky Mountains area west of Calgary, about one hour drive from the conference hotels.

**Wind Farm/Head-Smashed-In Buffalo Jump**  (joint leisure/technical tour)

**Monday 27 July**  
8:00AM – 4:30PM  
US $110.00

See Companion Tours for details