

2007 Utility Electric Contact Report



(For injury incidents reported to the Oregon PUC through 2006)

Report compiled August 2007



Report available at: <http://www.puc@state.or.us> (click on "Safety")

Information Contact:

Jerry Murray, Sr. Utility Analyst
Utility Safety and Reliability Section
Oregon Public Utility Commission
550 Capitol St. NE, Suite 215, PO Box 2148, Oregon 97308-2148
Telephone: 503-378-6626
E-mail: jerry.murray@state.or.us

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Introduction

Incident reporting to the PUC is required by **ORS 654.715** (IOU's), and **OAR 860-024-0050** (all "operators" - defined in OAR 860-024-0001). The PUC Utility Safety and Reliability Staff use this information to help with National Electrical Safety Code (NESC) administration and to promote accident prevention.

The safe transportation of electric energy includes: building and maintaining facilities to meet a safety code; performing daily operations safely with trained, qualified, and supervised employees and contractors; and protecting the public. The root cause of many accidents is related to an unsafe act, not an unsafe condition. Also, there is often a lack of awareness of the degree of danger. The innocent looking wire that a bird can land on with impunity has the potential to end, or change forever, the life of a person who touches it. It is essential that all of us who live and work around power lines understand the danger, the possible consequences, and how to avoid it. The electric utilities have a responsibility to provide this education, to train and supervise employees, and to build and maintain their facilities to comply with the NESC, as required by the Commission's Safety Rules in OAR 860, Division 24.

This report contains a number of accompanying charts, along with a summary and recommendations. Electric operators can use this information to more accurately target their public information program and their worker safety training.

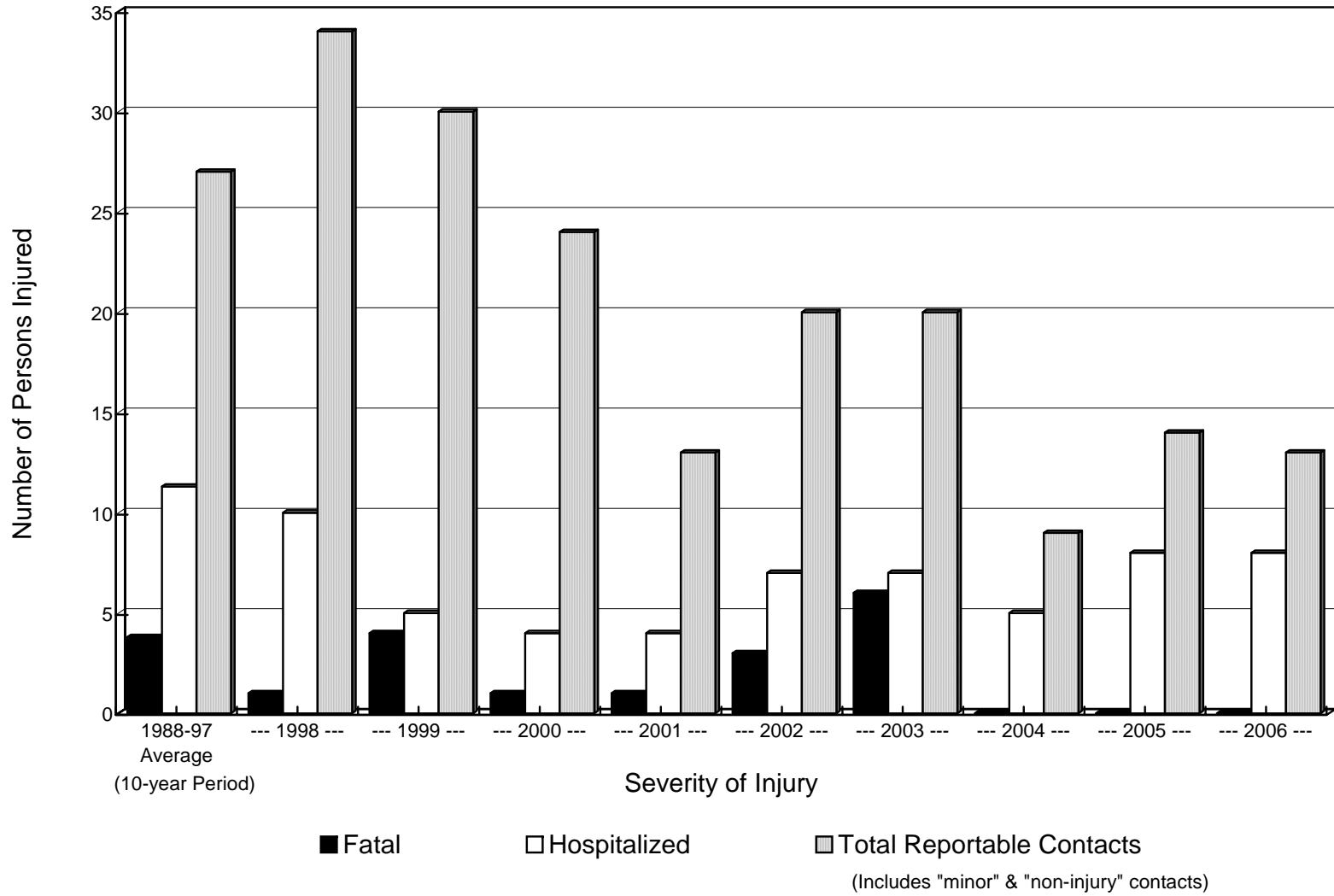
Summary

Here are some basic facts for 2006 incidents:

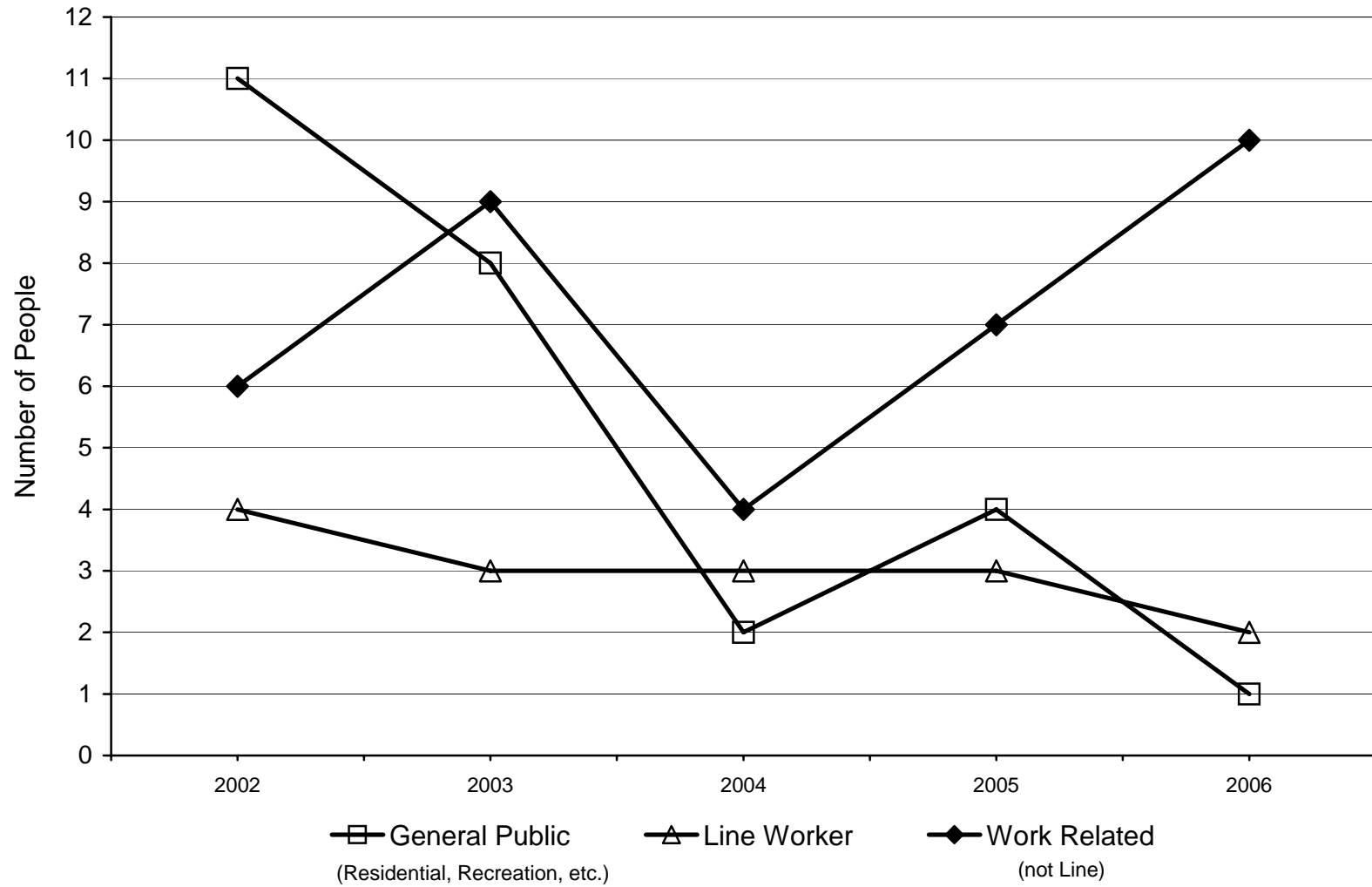
1. Thirteen people were involved in Injury* electrical contacts in ten separate incidents with electric utility facilities. Eight required hospitalization, five were determined to be minor or non-injury, and there were no deaths.
2. Most of the incidents involved “distribution” voltage overhead wires (between 600V and 30,000V). (See page 5)
3. Most of the accidents in 2006 were work related. This has been true since 1997 except for 2001. In 2005, the largest work-related accident category has been associated with home maintenance. Traditionally, the predominate cause of non-work accidents has been tree related.
4. All of the electrical contacts in 2006 involved males.
5. A lift truck was involved in a high-voltage line contact. In addition, one painter, using a ladder, made contact.
6. There were two tree-related incidents in 2006.
7. There were two injury incidents involving high-voltage underground systems.
8. Four firemen were injured in a single incident when a ladder was raised up into high-voltage conductors.

**Injury” as defined in OAR 860-024-0050. There were additional “reportable injuries” to utility personnel that did not involve electrical contact. These are not included in this report.

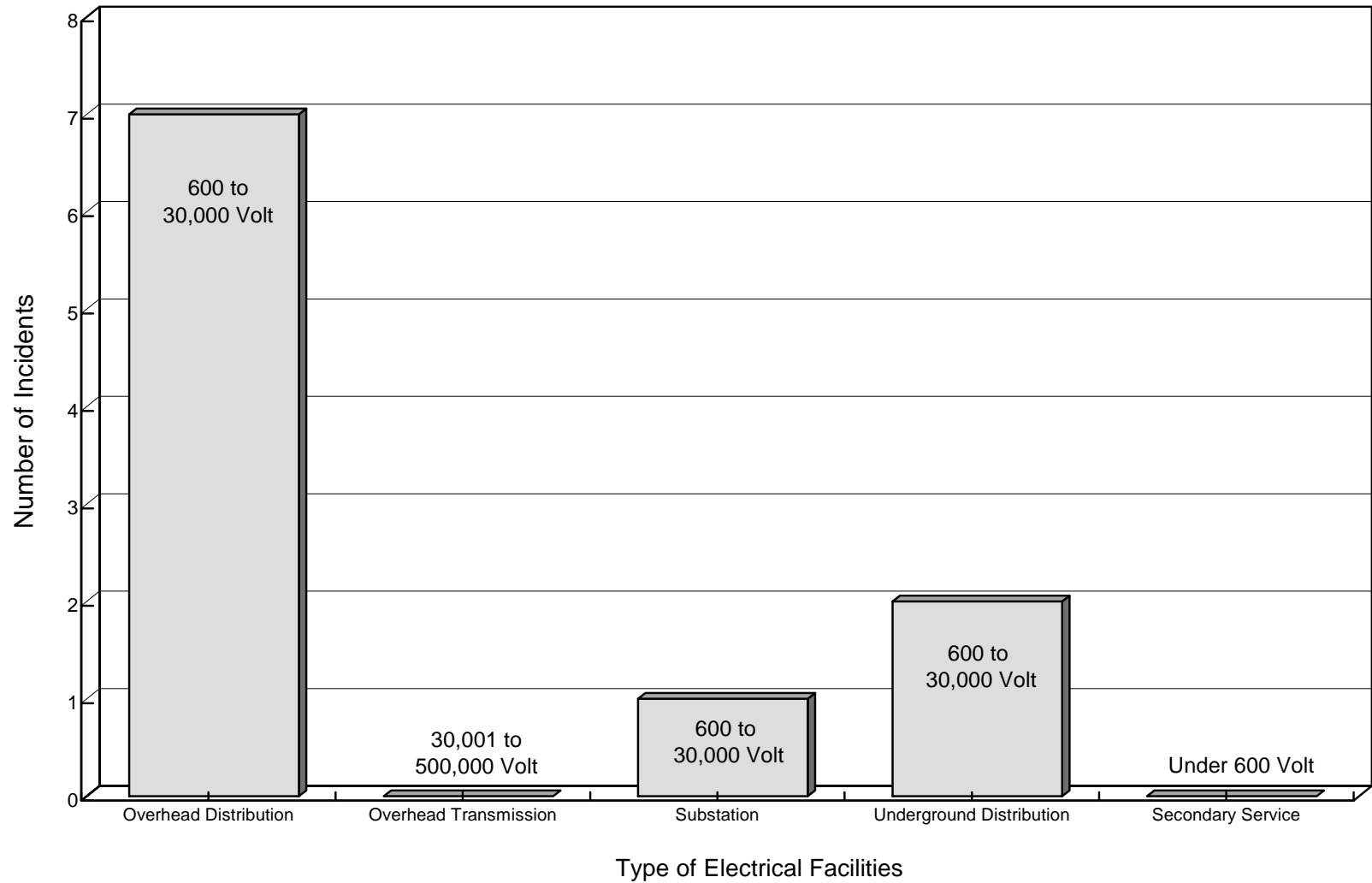
Electrical Contact Injuries by Severity



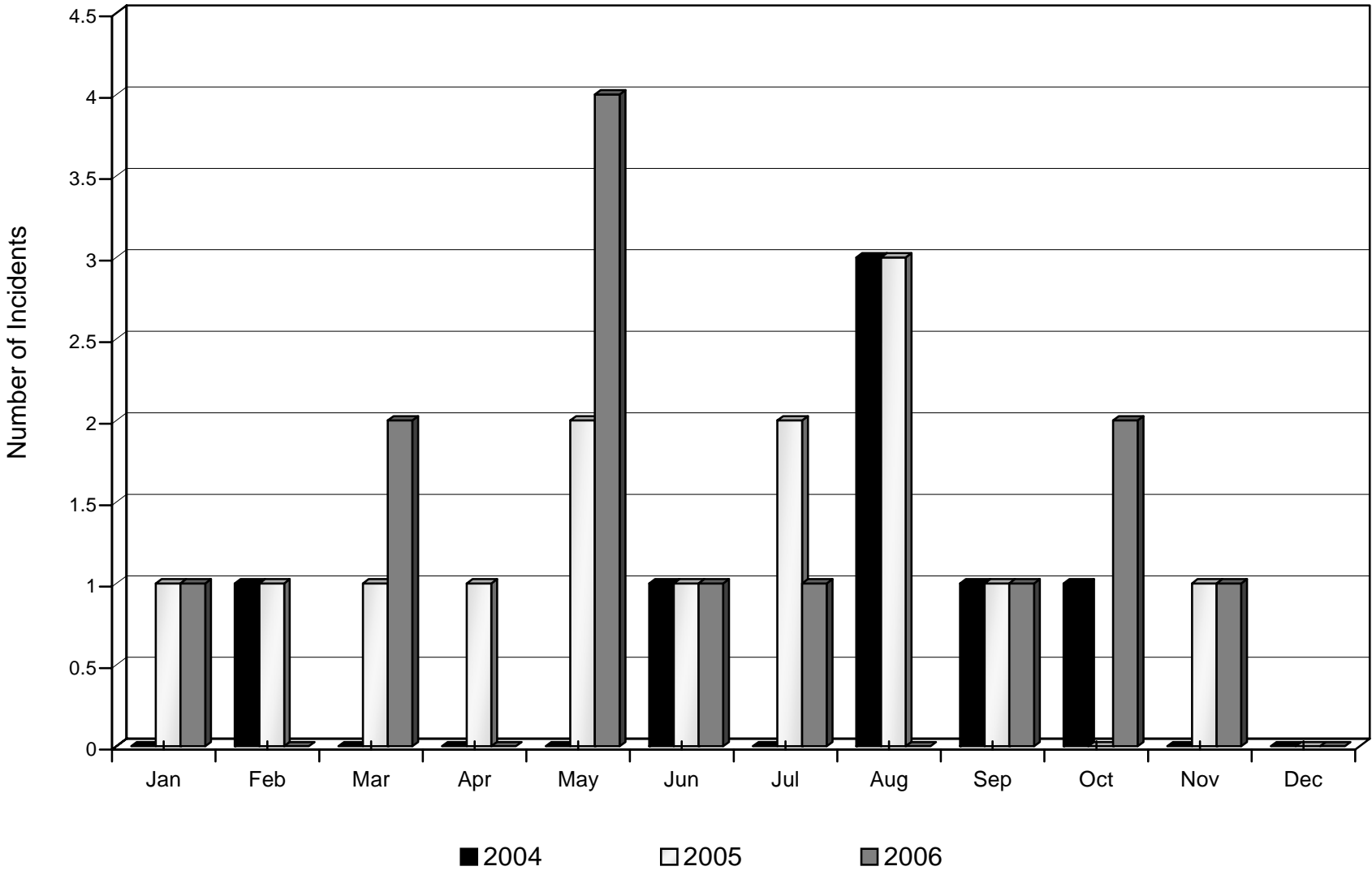
Electrical Contact Injuries by Activity Classification



Type of Electrical System Involved 2006 Incidents

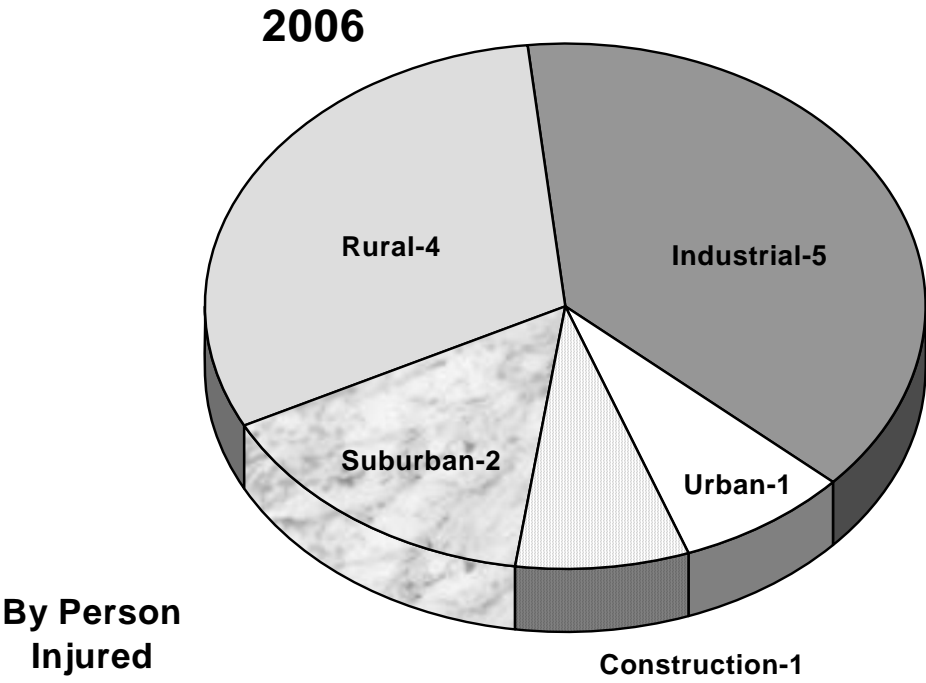
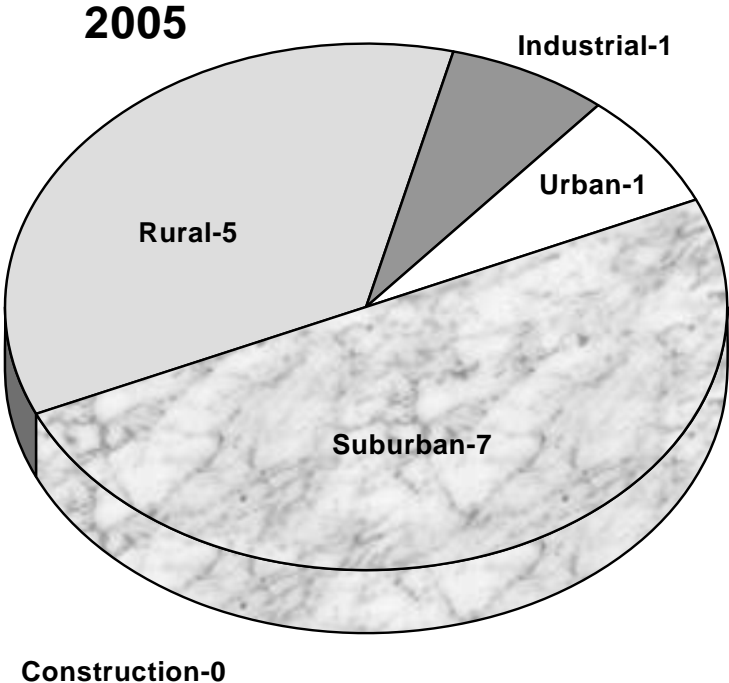


When Incidents Occurred - By Month



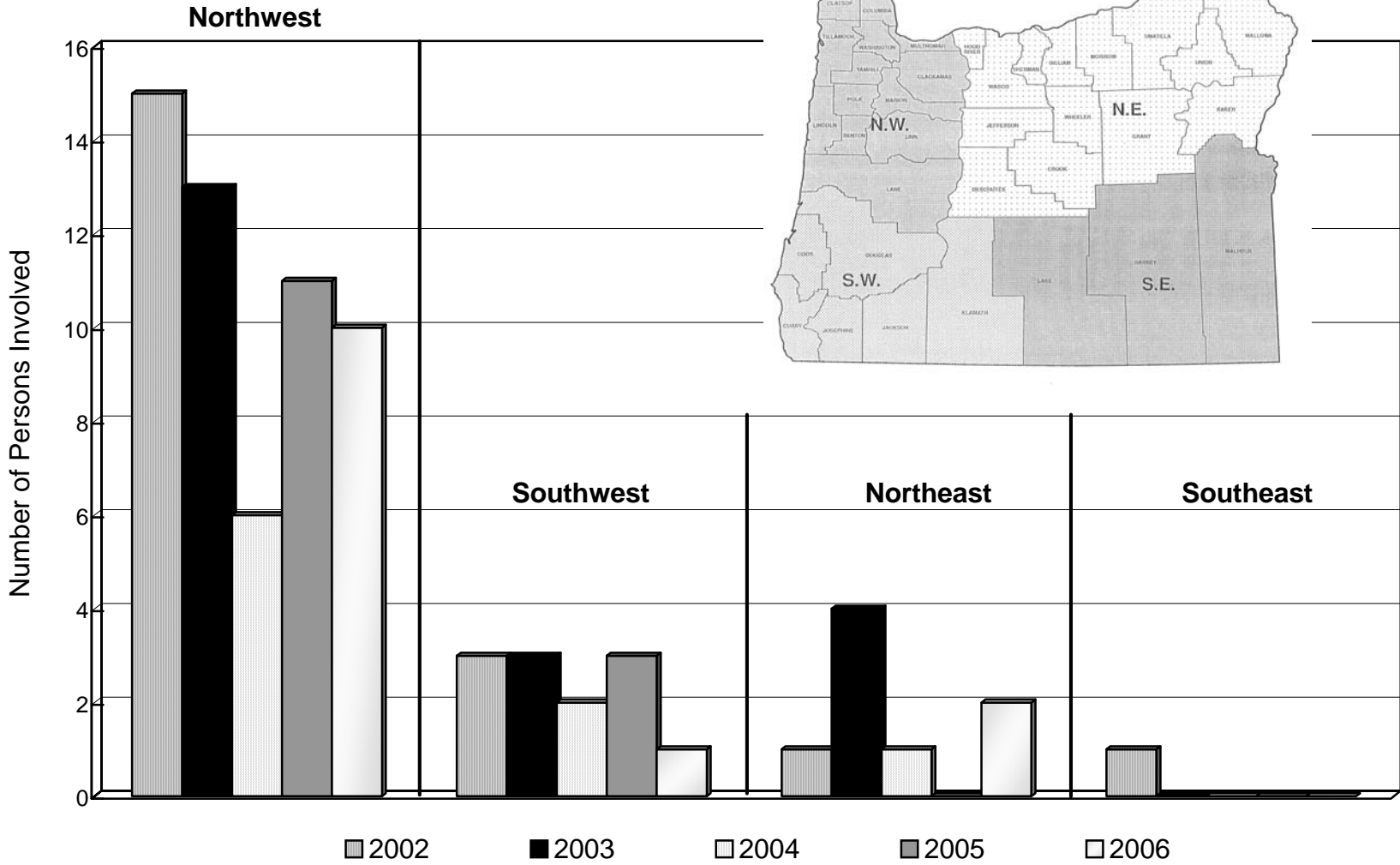
The pie chart below indicates where people are injured in regard to:
Demographic Areas or Sites: Rural, Suburban, Urban, Industrial, and Construction

Our statistics show rural areas typically have a higher rate than other types of areas (although not in 2005 and 2006).



By Person Injured

Where Contact Injuries Occurred - By Area

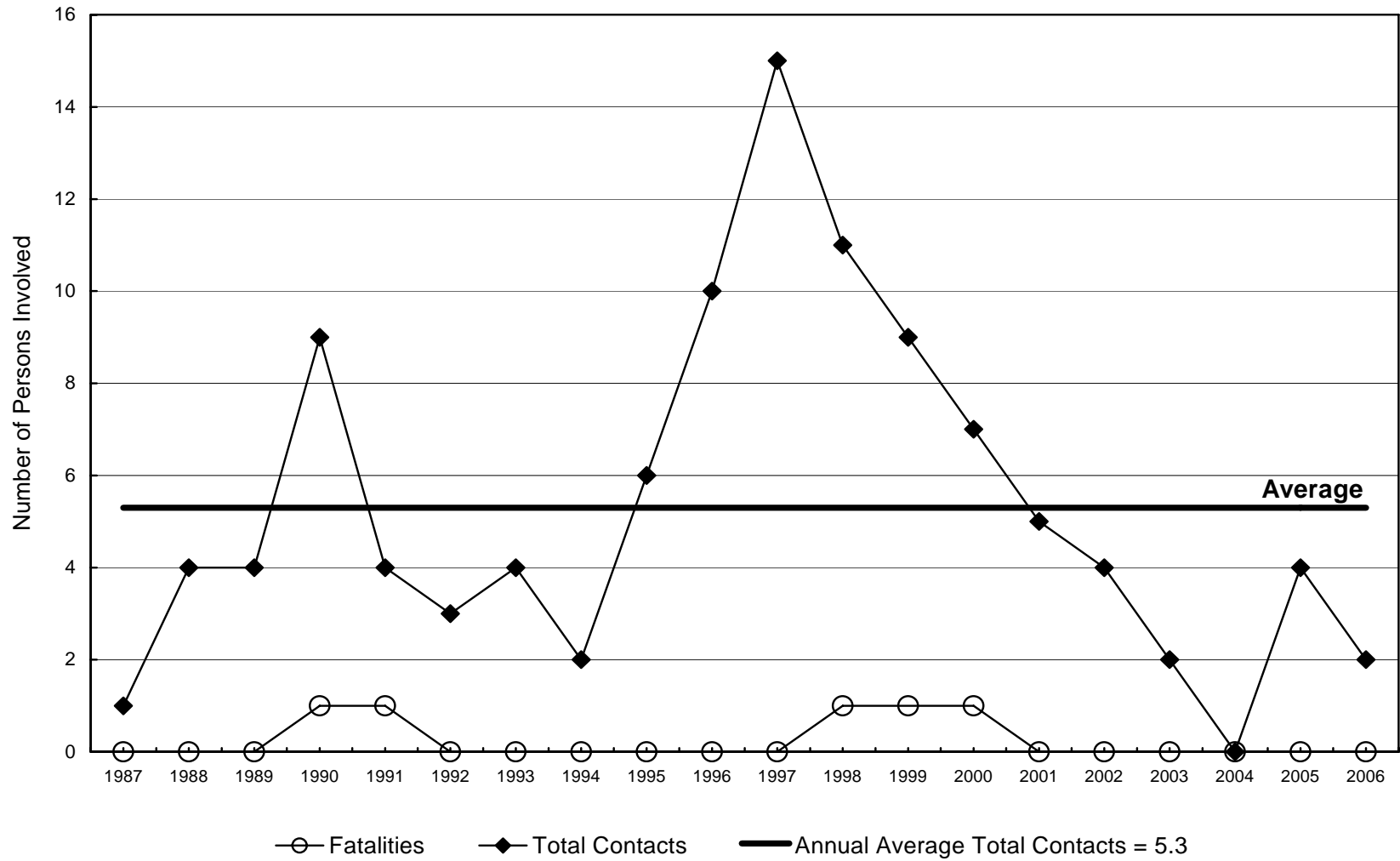


Special Areas of Concern

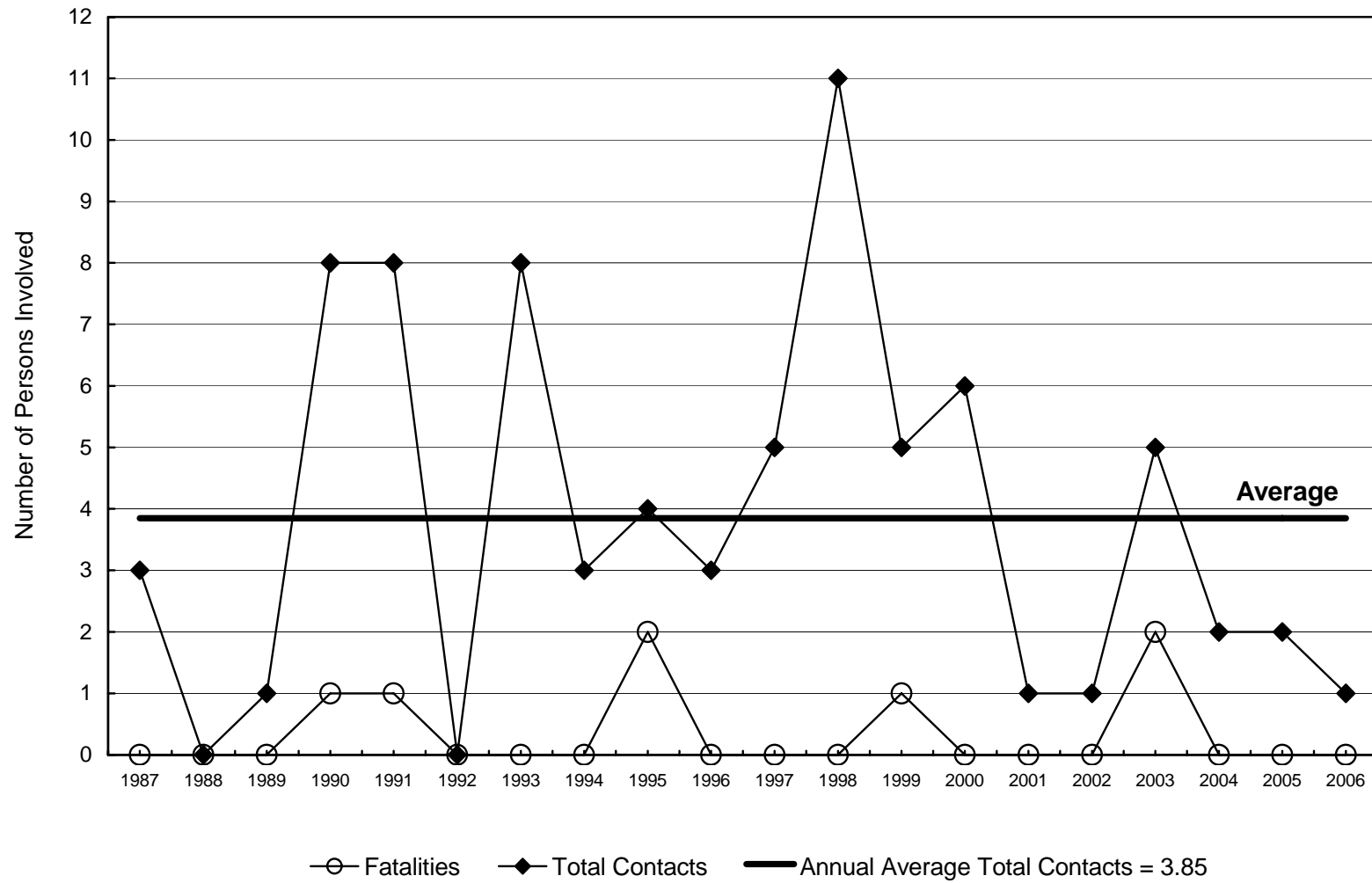
The next four charts track 20 years of incidents related to certain equipment or activities:

- ◆ **Tree-Related** - This category is, on average, where most people are injured. There has been an average of 5.3 tree-related contacts per year over the last twenty years. Many of these contacts involved homeowners trimming or falling trees in their yards. The majority of the remaining contacts were non-utility tree trimmers (landscapers) and loggers. If utility customers are going to get injured with high-voltage lines, the chances are high that it will be connected to a tree in their yard. The 2003 total of two injuries in this category is quite low. 2004 matches the astounding 1986 total of zero accidents in this category. Unfortunately, two men were injured doing this activity in 2006.
- ◆ **Crane-Related** - Crane contact has been a continuing source of concern needing special attention by the electric utilities and Oregon OSHA. Over this 20-year period, there has been an average of 3.85 people injured each year. One incident occurred in 2006 which involved a lift truck moving roof trusses. Below are some conclusions taken from recent crane incidents.
 - Crane contacts have been the most likely incident type to result in multiple victims.
 - Line visibility is not a problem in most cases.
 - Most operators know of the line's presence.
 - The types of "crane" involved in line contacts are highly varied.
 - Operator experience and training is highly varied.
 - Moving cranes in the "up" position is dangerous.
 - Cement pumper incidents are becoming more frequent (two in 1999, another in 2001, and one in 2005).
- ◆ **Irrigation Pipe-Related** - These incidents usually occur when farm workers raise pipes vertically to clear animals or debris. When a power line is above them, there are disastrous results. Constant utility education during certain times of the year can help raise awareness and prevent accidents. Radio announcements seem to work well. Our investigations reveal that even with education and awareness it is easy for people to just forget about the presence of overhead lines. Public service announcements on Spanish-speaking radio stations may be helpful. There were no accidents of this type in 2004, 2005, and 2006.
- ◆ **Antenna-Related** - Antenna contact is another area of concern that usually involves members of the public installing or maintaining equipment near homes. A father and his son were both injured in 2004 when the antenna they were installing on a roof fell into a high voltage distribution line. There were no antenna-related accidents reported in 2005 and 2006.

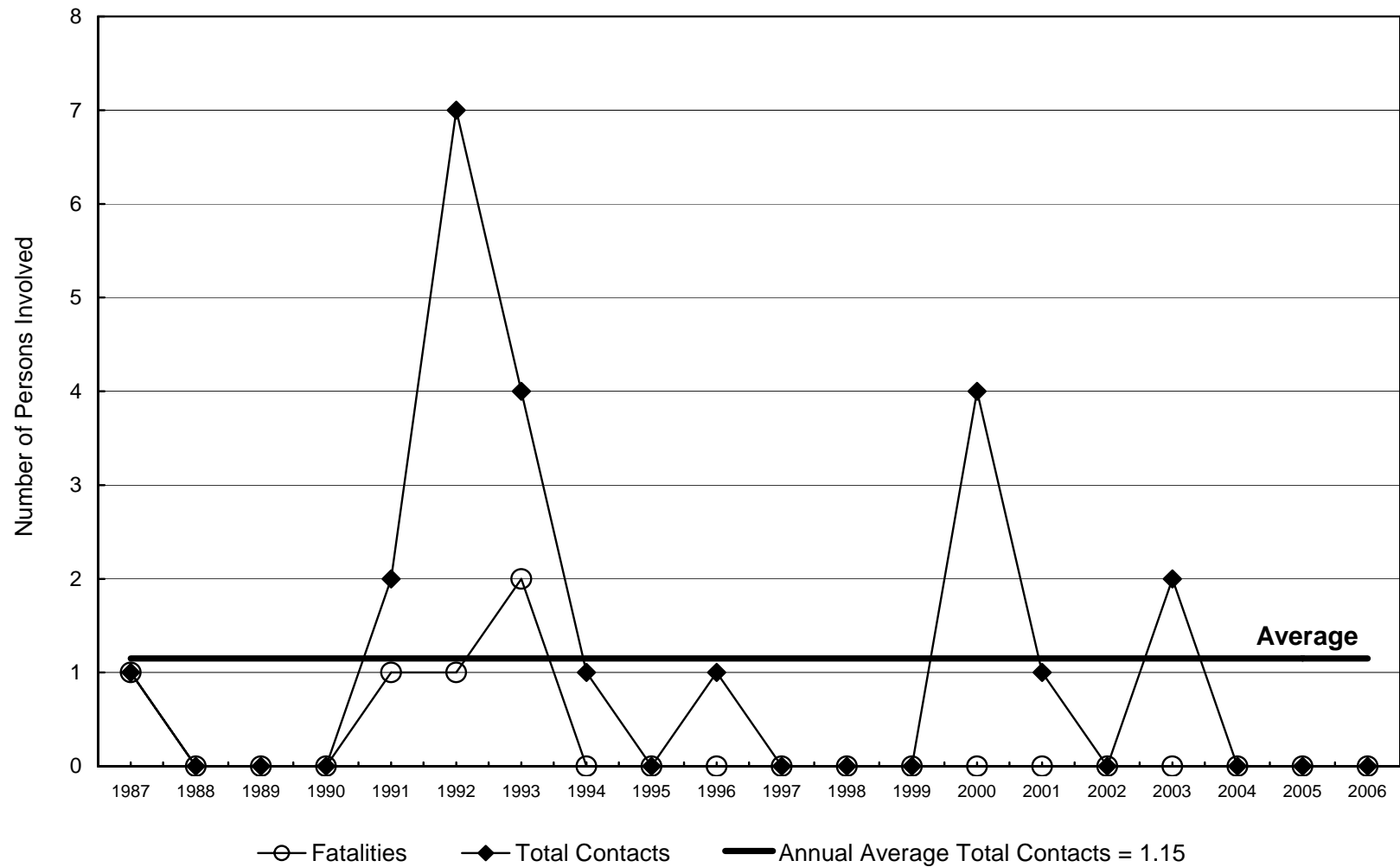
Tree Incidents Reported 20-Year History



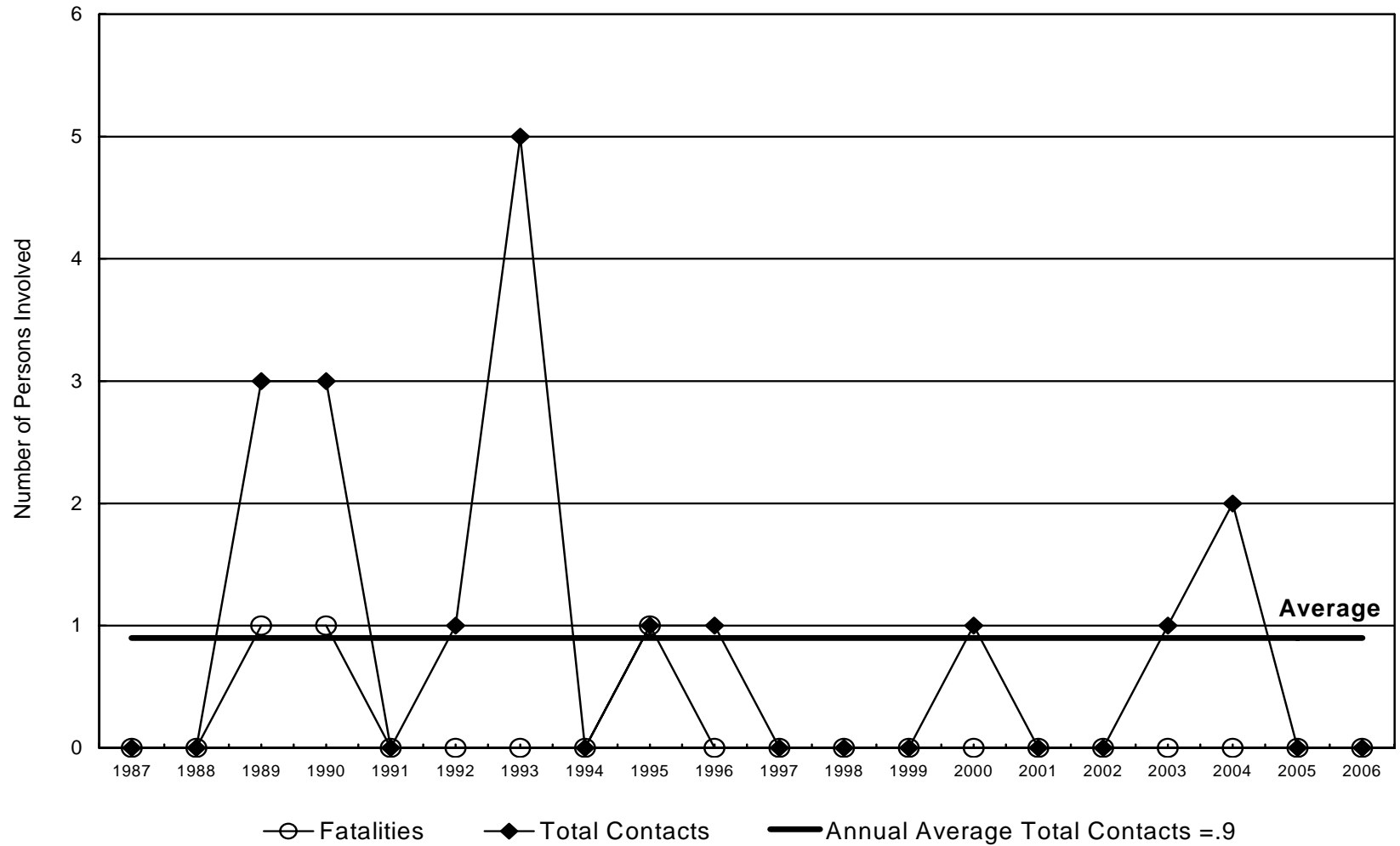
Crane Incidents Reported 20-Year History



Irrigation Pipe Incidents Reported 20-Year History



Antenna Incidents Reported 20-Year History

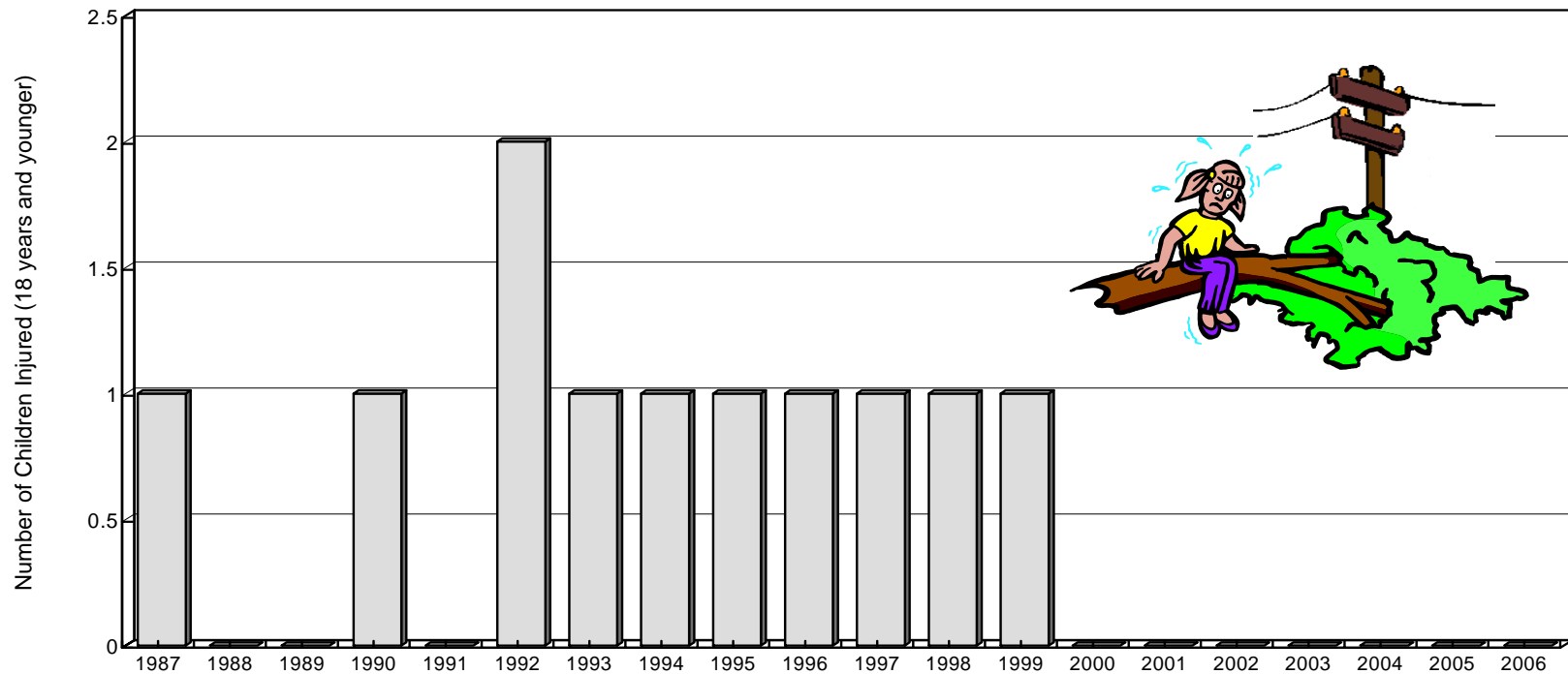


2006 – Breakdown of Injury Contacts by Activity Involved (By Person Injured)

Note: Some incidents fit into multiple categories.

➤ Tree Trimming/Falling or Other Contact	2
➤ Excavation/Dig-ins	2
➤ Construction/Maintenance (all types)	7
➤ Irrigation Pipe	0
➤ Crane/Lift/Digger booms	
• Lift Truck	1
➤ Ladder access	
• Painter (ladder into line)	1
• Firefighters	4
➤ Line/Utility-Related Work	
• Overhead line work (electric)	1
• Underground work	0
• Electric Substation	1
➤ Direct Contact	
• Line worker (overhead system)	1
• Wire down on car / hit pole	1
• Underground (vacuum excavator)	2
•	
➤ Vehicle collision (car hit pole)	1

Children Incidents in Trees 20-Year History High-Voltage Line Contacts in Oregon



Average Injury over 20-year period is about one every other year or .55 per year.

This last chart, Children Incidents in Trees, reflects some serious statistics for an activity that concerns us all.

Although there were no injuries in this category in the last seven years, we cannot afford to become complacent.

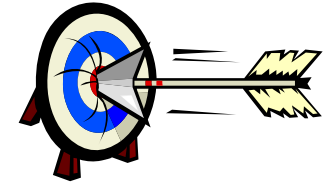
This is an important safety issue. Staff believes that consistently better tree-to-line clearances being maintained across the state are directly contributing to these excellent results.

The worst years on record were 1980 through 1983 when there were 12 children injured in trees.

Recommendations to Electric Utilities by the OPUC Safety Staff

1. Continue the effective general safety education programs now in place. These efforts are preventing accidents. Ongoing programs for schools are particularly encouraged. All grade school students in Oregon should receive power-line safety education at least twice during these years. Some excellent bill stuffers have been developed, and we recommend their use for educating customers about common hazards. Specifically timed safety messages on radio and television are valuable to warn the public about downed lines and other hazards.
2. Focus educational programs to:
 - a. Target construction workers where construction is anticipated. A special emphasis should be placed on work using crane or lift equipment. Crane-related accidents have been very high when construction levels are up. Educate about dig-in hazards and one-call notification.
 - b. Target firefighters who respond to structure fires.
 - c. Warn homeowners and landscape tree trimmers about electrical hazards related to trees. This is a key area needing emphasis to every customer.
 - d. Continue education for agricultural workers. PUC staff specifically recommends broadcasting messages on Spanish language-speaking radio stations. Irrigation pipe accident prevention should be particularly emphasized. Stacking or laying out pipe under power lines should be discouraged (per OSHA rules). This has been a significant cause of serious injuries over the years.
3. Emphasize utility worker safety programs to reduce the number of contact incidents. Consider the expanded use of rubber gloves in any primary area, overhead and underground, energized or not. Trends indicate that accidents related to underground systems are on the rise.
4. Notification to utilities should be encouraged prior to all work or activities which will occur near both overhead and underground lines.
5. Maintain a National Electrical Safety Code compliant system to provide a consistently safe environment for electrical and communication workers.

Each electrical utility should consider these recommendations with the perspective of knowing your local conditions and activities, priorities, and potential hazards. Our hope is that this information will help you develop an effective accident prevention program.



Target

Your Education Efforts

Preventing accidents requires action!

- ✓ Use programs that have been successful in the past. Be creative in presenting information in attention-getting ways.
- ✓ Try new ideas. Target problem areas associated with power-line safety. (Customers trimming their trees, homeowner maintenance, and activities associated with cranes, construction sites, and dig-ins.)
- ✓ Reward creative new ideas and those who spot potential problem areas.
- ✓ Reward safe workers, especially those who consistently encourage safe practices for their crews.
- ✓ Give all employees the chance to know safety basics and be part of the accident prevention team.
- ✓ Electrical safety training should be a part of every grade school child's education at least twice.
- ✓ Consider using safety-related bill stuffers regularly. Caution customers about tree-related hazards.
- ✓ Encourage and participate in at least one (per year) utility worker safety day (or half day) with all operators who share the overhead and underground rights-of-way with you.
- ✓ Put more emphasis on training to firefighters and first responders about unsafe acts near power lines.

Public Safety Education is an essential responsibility of the electric utility industry.

Worker Safety Training and Supervision is required for all utility operators.