

**:: Charles M. Burt ::**



**Chairman of the Board, ITRC**

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**Ph.D., P.E., CID**

- Author or co-author of 120 articles and study guides, related to on-farm irrigation, canal modernization, and efficiency (See below for a partial list of publications).
- First chairman of the IA Certification Board.
- Extensive field and design experience in drip, sprinkler, and surface.
- Extensive field and theoretical experience in canal / pipeline / pump modernization.
- Work experience in 25 countries.
- Registered Civil Engineer and Agricultural Engineer, California.
- Registered Professional Engineer, Utah.
- Person of the Year (1997) - The Irrigation Association.
- Person of the Year (2000) - California Irrigation Institute.

**Professor, BioResource and Agricultural Engineering Department**

**Teaches the following University irrigation classes:**

- BRAE 340 Irrigation Water Management
- BRAE 331 Irrigation Theory
- BRAE 533 Irrigation Project Design
- BRAE 438 Drip Irrigation
- BRAE 414 Irrigation Engineering
- BRAE 440 Agricultural Irrigation Systems
- BRAE 405 Chemigation

**Education:**

- B.S., Soil Science, California Polytechnic State University, San Luis Obispo, CA
- M.S., Irrigation and Drainage Engineering, Utah State University, Logan, UT

- Ph.D., Engineering, Utah State University, Logan, UT

**Examples of publications by Dr. Charles Burt:**

- Burt, C.M., G. Stringham and D. James. 1976. Increasing Yields on Recently Graded Land Through Proper Phosphate Fertilization. Utah Science. Reprinted in Nov/Dec 1976 issue of Irrigation Age.
- Burt, C.M. and J. Keller. 1976. Very Low Pressure Sprinkler Irrigation. ASAE Paper No. 76-2517. , and Utah State University 2111(d)-12 bulletin. Dept. of Agricultural and Irrigation Engineering.
- Merriam, J., Shearer and C.M. Burt. 1980. Evaluating Irrigation Systems and Practices. Chapter 17 in the ASAE Monograph No. 3. M.E. Jensen, editor. Pp. 721-762.
- Burt, C.M. and J. Lord. 1981. Demand Theory and Application in Irrigation District Water Delivery. Proceedings of the ASAE Specialty Conference on Irrigation Scheduling, held at Chicago, Ill.
- Burt, C.M. 1983. Regulation of Sloping Canals by Downstream Regulation Control. ASAE Paper No. 83-2582. Presented at the winter meeting of ASAE in Chicago, Ill.
- Burt, C.M., R. Walker and S. Styles. 1992. Irrigation System Evaluation Manual - rev 1992. A comprehensive, documented software package for evaluation of agricultural irrigation systems. Funded by the OWC, Calif. DWR. Pub. by ITRC, Dept. of Agricultural Engineering, Cal Poly, San Luis Obispo, Calif.
- Burt, C.M. and G. Gartrell. 1993. Irrigation Canal - Simulation Model Usage. 1993. Journal of Irrigation and Drainage Engineering. 119 (4):631-636.
- Plusquellec, H., C.M. Burt and H. Wolter. 1994. Modern Water Control in Irrigation - Concepts Issues and Applications. World Bank Technical Paper Number 246. Irrigation and Drainage Series. The World Bank. Washington, D.C.
- Burt, C.M. 1994. The Irrigation Consumer Bill of Rights. Irrigation Journal. Vol 44(4): 32-33.
- Burt, C.M. and S. Styles. 2000. Drip and Microirrigation for Trees, Vines, and Row Crops, with special sections on buried drip. Published by the ITRC, Cal Poly, San Luis Obispo, CA. ISBN 0-9643634-2-9. 292p.
- Burt, C.M. 1995. The Surface Irrigation Manual - A Comprehensive Guide to Design and Operation of Surface Irrigation Systems. Waterman Industries. Exeter, CA. ISBN 0-9639016. 373 p.
- Burt, C.M. 1995. Guidelines for Establishing Irrigation Scheduling Policies. Theme V: Interaction Between Water Delivery and Irrigation Scheduling. ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice. Sept. 12-13. Rome, Italy.
- Burt, C.M., K. O'Connor and T. Ruehr. 1995. Fertigation. Published by the ITRC, Cal Poly, San Luis Obispo, CA. ISBN 0-9643634-1-0. 326 p.
- Burt, C.M. and S. Styles. 1996. Modern Water Control and Management Practices in

Irrigation: Impact on Performance. FAO Technical Papers. Water Report 19. ISSN 1020-1203. 223 p.

Burt, C.M., R. Mills, R. Khalsa, and V. Ruiz. 1998. Improved Proportional-Integral (PI) Logic for Canal Automation. Journal of Irrigation and Drainage Engineering.

- Burt, C.M., A. Clemmens, T. Strelkoff, K. Solomon, R. Bliesner, L. Hardy, T. Howell, and D. Eisenhauer. 1998. Irrigation Performance Measures - Efficiency and Uniformity. Journal of Irrigation and Drainage Engineering 123(6):423-442.
- Burt, C.M. 2004. Rapid Field Evaluation of Drip and Microspray Distribution Uniformity. Kluwer Academic Publishers. Irrigation and Drainage Systems 18:275-297.
- Burt, C.M., A.J. Mutziger, R.G. Allen, and T.A. Howell. 2005. Evaporation Research - A Review and Interpretation. Journal Irrig. Drain. Engr. 131(1): 37-58.
- Mutziger, A.J., C.M. Burt, D.J. Howes, and R.G. Allen. 2005. Comparison of Measured and Modified FAO 56 Modeled Bare Soil Evaporation. Journal Irrig. Drain. Engr. 131(1): 59-72.
- Allen, R.G., A.J. Clemmens, C.M. Burt, K. Solomon, and T. O'Halloran. 2005. Prediction Accuracy for Projectwide Evapotranspiration Using Crop Coefficients and Reference Evapotranspiration. Journal Irrig. Drainage. Engr. 131(1): 24-36.
- van Overloop, P.J., J. Schuurmans, R. Brouwer, and C.M. Burt. 2005. Multiple Model Optimization of Decentralized PI-Controllers on Canals. Journal Irrig. Drain. Engr. 131(2): 190-196.

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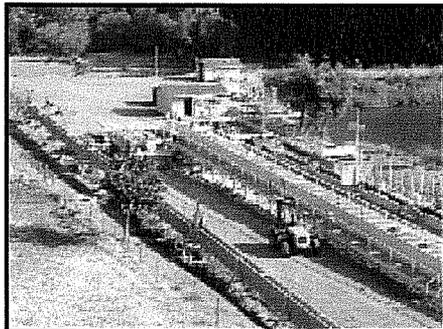
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## :: About ITRC ::

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ITRC is a center of excellence housed within the BioResource and Agricultural Engineering (BRAE) Department of California Polytechnic State University (Cal Poly) in San Luis Obispo. The linkage to the BRAE Department is unique among irrigation centers – ITRC's organization was specifically developed as such to ensure long-term positive benefits to Cal Poly's academic irrigation teaching program – which provides long-term benefits to California and the nation.



Water Delivery Facility

ITRC's modern engineering offices, in addition to providing professional resources for ITRC staff, also house two training rooms and office space for both graduate and undergraduate students. Outdoors is the unique Water Delivery Facility to demonstrate pumps, pump testing, flow measurement, SCADA, and canal automation. Additionally, the outdoor Irrigation Practices Field contains a complete assortment of on-farm and landscape irrigation systems and equipment.

Cal Poly has a long tradition of providing pragmatic irrigation training and technical expertise to industry, farmers, irrigation districts, and state/federal agencies. ITRC was officially formed in 1989, and continues to be self-supporting through contracts. Its work is approximately 65% direct technical assistance, 15% training, and 20% research (both applied government-funded, and industry). Focus areas include:

- Irrigation projects (irrigation district modernization, water balances, river basin return flow issues, SCADA, canal automation, pump automation, flow measurement, energy consumption, and efficiency);
- Farm irrigation (drip, surface, and sprinkler irrigation; drainage; salinity; energy consumption; irrigation evaluations; evapotranspiration; pumps);
- Landscape (primarily development of urban water conservation programs).

The center is run by Dr. Charles Burt (Chairman and Founder) and Dr. Stuart Styles (Director) – both recognized internationally as irrigation experts – with an excellent professional staff of 13 persons. Additionally, 15-25 students are hired at any one time to provide support. ITRC utilizes specialists from within and outside the university to provide additional expertise. As an example, ITRC has worked for several years with an international team to develop sophisticated canal automation algorithms.

ITRC is active throughout the western U.S. and the world in irrigation research, technical assistance, and environmental/energy assessments. For example:

- ITRC has numerous active irrigation district modernization projects throughout California, as well as in Washington, northern Oregon, Colorado, Arizona, Idaho, and Oklahoma. Most involve some aspect of energy conservation or environmental improvement while simultaneously modernizing irrigation districts.
- The World Bank, FAO/UN, UNDP, and others fund ITRC to provide expertise on irrigation modernization in China, Philippines, Vietnam, Kyrgyzstan, Azerbaijan, India, Pakistan, Mexico, and many other countries.
- Manufacturers hire ITRC for a wide variety of projects ranging from testing of polymers in irrigation on field trials, to determining friction on large diameter pipes, to examining the performance of new

sprinklers and drip tape under both field and laboratory conditions.

- ITRC has been a major innovator in water-related peak load reduction and electrical energy conservation for the California Energy Commission, utilities, and others.
- ITRC actively participates in various water-related technical sessions and workshops of professional organizations such as the US Committee on Irrigation and Drainage, and the American Society of Civil Engineers.

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