



# The Role of NIST in U.S. Legal Metrology

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NIST

Office of Weights and Measures

# Measurement Traceability

International Standards  
(SI Units)

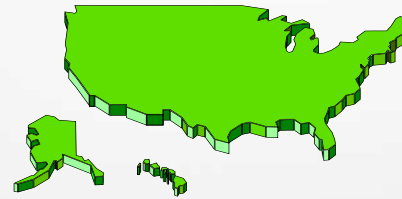


NIST

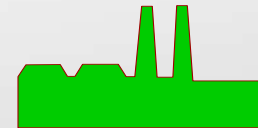
State Laboratory Standards

State Field Standards

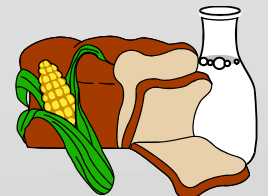
An unbroken chain from international standards to the market.



Devices



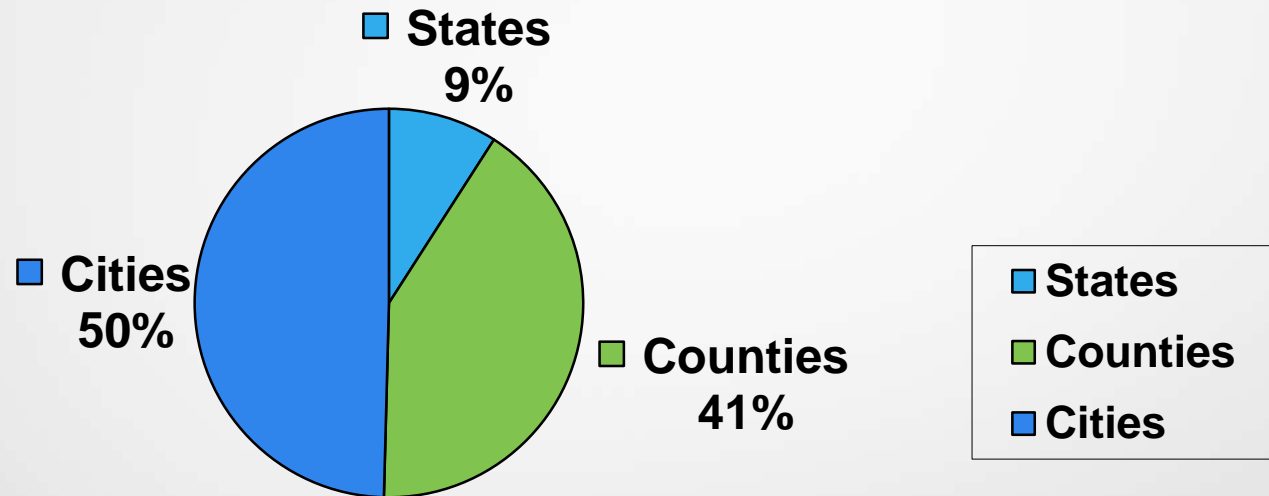
User/  
Consumer



# Weights and Measures Regulation in the U.S.

- Weights and measures regulations implemented at State and local government level
- No Federal regulation of weighing and measuring devices except for US Department of Agriculture (USDA)
- USDA Grain Inspection, Packers, & Stockyards Administration (GIPSA)
  - Regulates import and export of grain and related weighing and measuring equipment
  - Regulates livestock sales involved in interstate commerce

# U.S. Weights and Measures Jurisdictions\*



**55 States & Territories**  
**250 Counties**  
**300 Cities**  
**605 Total W&M Jurisdictions**

\*the number of jurisdictions and percentages are estimates only.

# NIST's Role

To promote and help facilitate uniformity in legal metrology, especially in regard to standards and practices used in commerce, and to provide traceability to national standards.

# Legal Metrology

NIST has no:

police power or authority over the States.

We obtain uniformity and provide traceability through cooperation, standards development and training.

# OWM Mission

To improve the accuracy of measurements, enhance consumer protection, foster fair competition, and facilitate economic growth and trade through technical activities that promote uniformity in national and international legal metrology laws, regulations, standards, test procedures, and enforcement.

# Customers

- State Weights and Measures Programs (regulators)
- Federal agencies (regulators from FDA, FTC, USDA)
- Manufacturers of commercial products
- Retail establishments (Wal-mart, grocers, etc.)
- Instrument/Device manufacturers
- Service companies (scale or meter repair)
- Consumers and consumer groups
- Educators (Metric outreach)
- Industry Associations



# Office of Weights and Measures (OWM) Activities

- **Coordination**

- of responses to regulatory issues to promote uniformity and fair trade,

- **Technical Support to Stakeholders**

- Regulatory officials
- Business & industry
- Standards Committees
- Federal Agencies
- Laboratories

## **Training**

- Laboratory Metrology
- Field Officials
- Administrators
- Industry

- **Information Dissemination**

- Publications and NIST Handbooks
- Website
- Outreach

- **Representation**

- OIML, SIM, APLMF and other international organizations

# OWM Activities – Metric Program

- Facilitating the use of the metric system
  - Education
  - Promotion
- Voluntary Metric-Only Labeling
  - Since 1994 the Federal Fair Packaging and Labeling Act has required both metric and inch-pound units
  - 49 States allow metric only labeling for products regulated at the state level

# OWM Activities – Technical Support

- Technical support to stakeholders:
  - Field Officials, Business & Industry
  - NCWM Committees (including NTEP)
  - Other Federal Agencies (FDA, USDA, FTC, DoC)
  - Laboratories
- Study issues regarding new technologies and applications
  - Assistance with interpretations of NIST HB 44, 130, 133 and with field and laboratory test procedures
- Develop inspection procedures
- Upgrade state lab capabilities

# OWM Activities – Information Dissemination

- Publications and Standards
  - NIST Handbooks 44, 130, 133
  - NIST Handbook 105 Series
  - OWM Newsletter
  - Technical interpretations and guidance documents
  - Standard Operating Procedures (SOPs)
  - Field Manuals
- Website
- Presentations

# NIST Handbook 44

*"Specifications, Tolerances, and Other Technical Requirements for Commercial Weighing and Measuring Devices"*

- also applies to law enforcement equipment
- A product of the weights & measures community
- Published annually by NIST to promote uniformity
- Developed through the NCWM
- Adopted by all states
- Used in Type Evaluation, Initial and Subsequent Verification
- On our website:

<http://www.nist.gov/pml/wmd/pubs/h44-14.cfm>

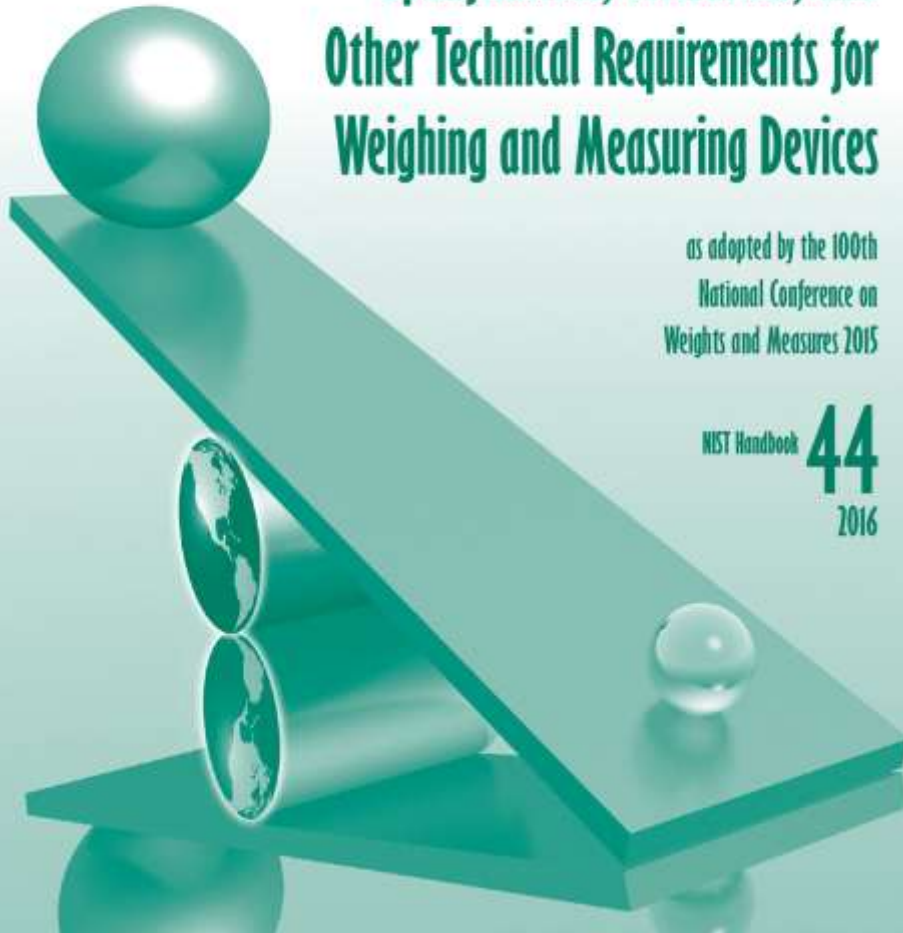


**NIST**  
National Institute of  
Standards and Technology  
U.S. Department of Commerce

# Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices

as adopted by the 100th  
National Conference on  
Weights and Measures 2015

NIST Handbook **44**  
2016

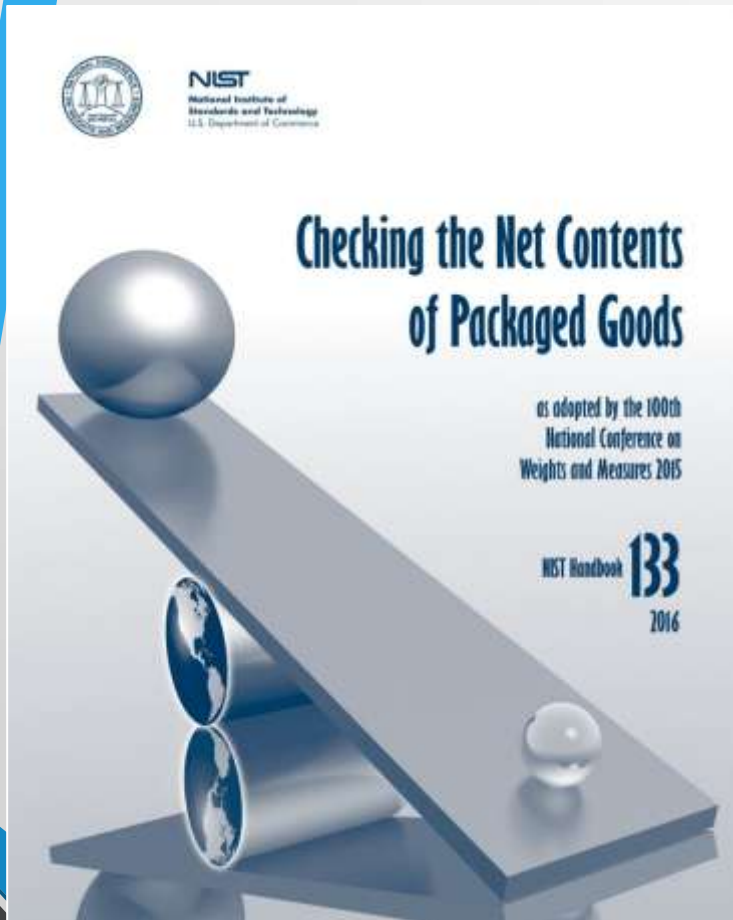


# Handbook 130



- *"Uniform Laws and Regulations in the areas of legal metrology and engine fuel quality"*
- Published by NIST to promote uniformity
- Developed through the NCWM
- Uniform laws and regulations
  - Serve as template or model
- Adoption by States:
  - Some adopt in entirety
  - Some use as guideline

# Handbook 133



- *"Checking the Net Content of Packaged Goods"*
- Published by NIST to promote uniformity in package inspections
- Developed through the NCWM
- Adoption by:
  - 44 states or territories adopt in its entirety
  - Federal Agencies



# Other Publications

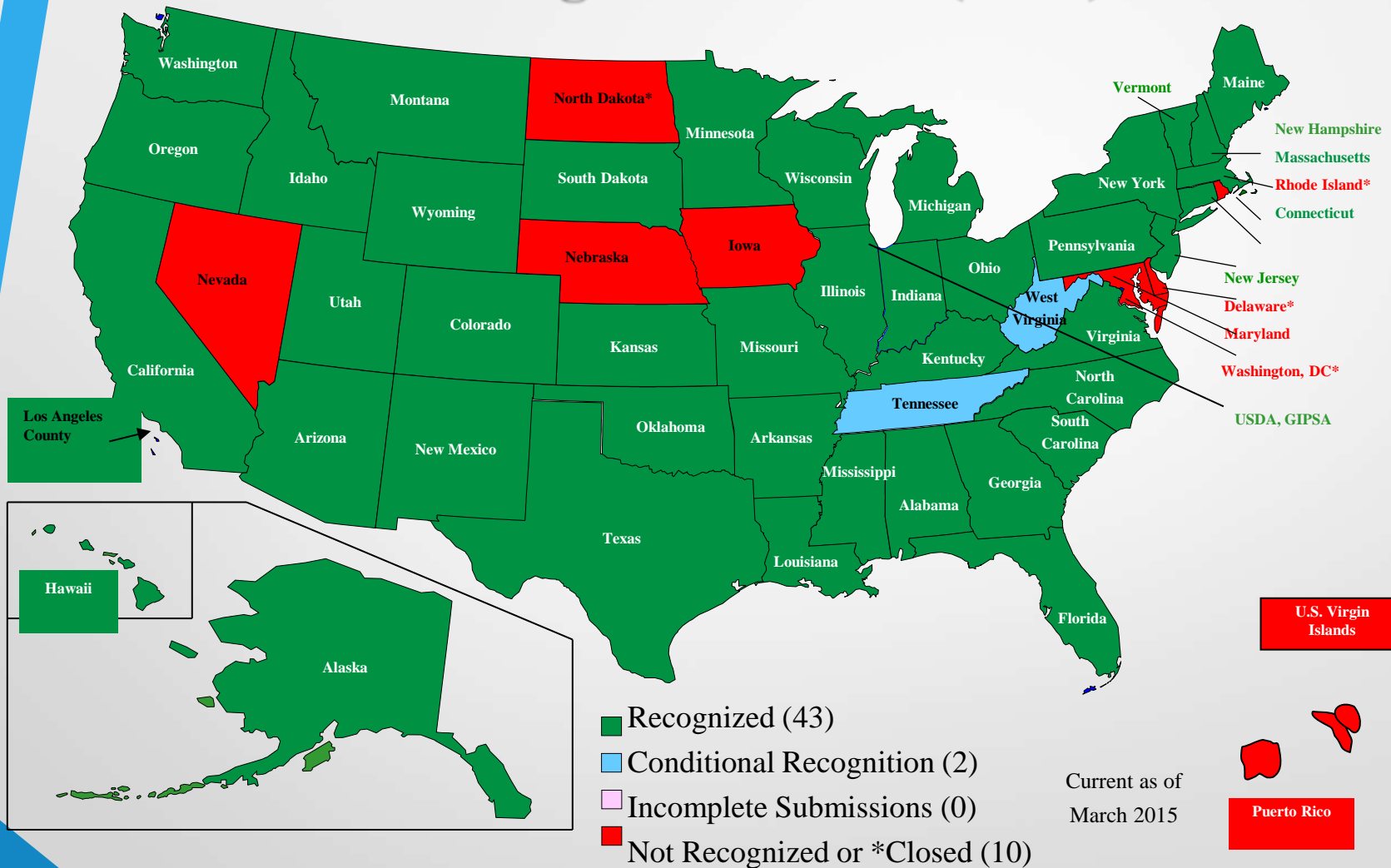
- NIST Handbooks 105 Series
  - Specifications for standards used to test commercial devices (field standards)
- NIST Handbook 143, NISTIR 6969 & IR 7383
  - Laboratory metrology procedures and standards
- NIST Special Publications include:
  - Interpretations (SP 330 and SP 811)
  - Guides
  - Manuals

[www.nist.gov/owm](http://www.nist.gov/owm)

# State Metrology Laboratories

- Most states have a state run laboratory
  - Some counties and territories
- Laboratory metrologists trained at the NIST training laboratory for mass, volume and length calibrations
- Required to comply with NIST Handbook 143 for certificate of traceability
  - Requirements are identical to ISO 17025 with some additions related to legal metrology

# U.S. State Metrology Laboratories OWM Recognition Status (2015)



**Drop in Recognized labs due to loss of staff.**

# OWM Activities - State Laboratory Program

- Provide metrology laboratory training
- Operate a measurement traceability recognition program for State legal metrology laboratories
- Evaluate and continuously upgrade the laboratory quality systems
- Plan and coordinate proficiency testing and round robins annually through the regional measurement assurance program meetings
- Provide technical information to State and Industry laboratories

# OWM Activities – International Trade

- Work with international standards developing organizations
  - International Organization of Legal Metrology (OIML), ISO, API, ASTM, others
- Work to eliminate trade barriers for U.S. industry
  - Promote harmonization of U.S. and international standards
  - Promote U.S. standards internationally
  - Facilitate participation of U.S. industry in international standards development

# OWM Activities - Training

- General and specialized training
  - Regional and individual states
  - Regulatory Officials
    - Inspector training
    - Administrator Training
  - Industry
    - Device service companies, packaging companies, manufacturers
  - State and Industry Laboratory Metrology

# Training

Training	2013	2014	2015
Total number of students	633	499	718
in Webinars	110	133	190
Total number of courses	47	37	27
Webinars offered	16	14	14

# National Conference on Weights and Measures (NCWM)

- Established by NIST in 1905
- A unique collaboration between industry and government to further cooperation with States and encourage uniformity
- Voluntary standards organization
  - Standards developed through a committee and public hearing process
  - Uniformity is achieved through adoption and use of the standards



# NIST Role in NCWM

- Technical Advisors to NCWM Committees, Workgroups, and Sectors
- Publishes NIST Handbooks 44, 130, and 133
- Publishes NCWM Annual Reports
- Liaison between NCWM and Federal Agencies
- Authorized Type Evaluation Laboratory for load cells
- Executive Secretary to NCWM

# Legal Metrology Responsibilities of Federal Agencies

- **Food and Drug Administration**
  - Foods & drugs (human & animal), cosmetics, & medical devices.
- **United States Department Agriculture**
  - Meat and poultry
  - Produce (quality and grades).
- **Treasury Department**
  - Tobacco, wine, beer, distilled spirits & alcohol.

# Legal Metrology Responsibilities of Federal Agencies

- **Environmental Protection Agency**
  - Pesticides and herbicides.
- **Federal Trade Commission**
  - Packaging and labeling of most consumer products sold at retail.
- **Department of Transportation**
  - Compressed gases & hazardous materials.

# Contacts

**[www.nist.gov/owm](http://www.nist.gov/owm)**


Weights and Measures

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Thank you very much  
for your attention