President's Address

National Institute of Standards and Technology

Louisville, Kentucky

July 16, 2013

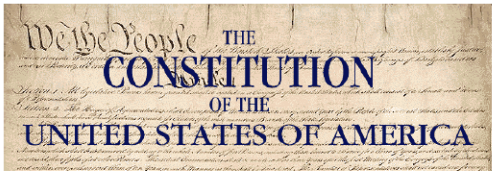
Dr. Willie E. May

Associate Director for Laboratory Programs/Principle Deputy

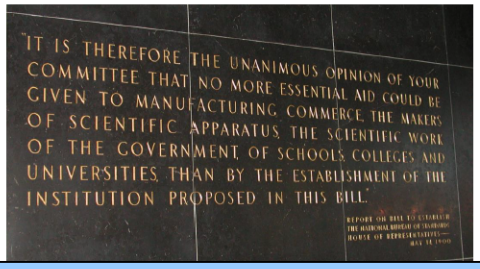
Dr. Willie E. May presented the following presentation on the behalf of the National Institute of Standards and Technology.

National Institute of Standards and Technology (NIST)

- Non-regulatory agency within U.S. Department of Commerce
- Founded in 1901 as National Bureau of Standards



Article I, Section 8: The Congress shall have the power to
…coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures



***Unique Mission within the Federal Government* …**
to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life

NIST-at-a-Glance

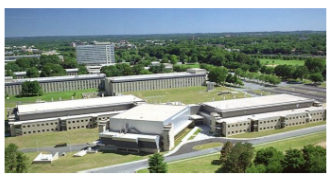
Major Assets

- ~ 3,000 Employees; 1800 Scientists and Engineers
- ~ 2,800 Associates and Facilities Users
- ~ 400 NIST Staff on ~1,000 national and international standards committees

NIST FY 2013 Congressional Appropriations $763M

Plus
~ **$100 M** from other Government Agencies
~ **$50 M** for other reimbursable services

NIST has two main campuses……



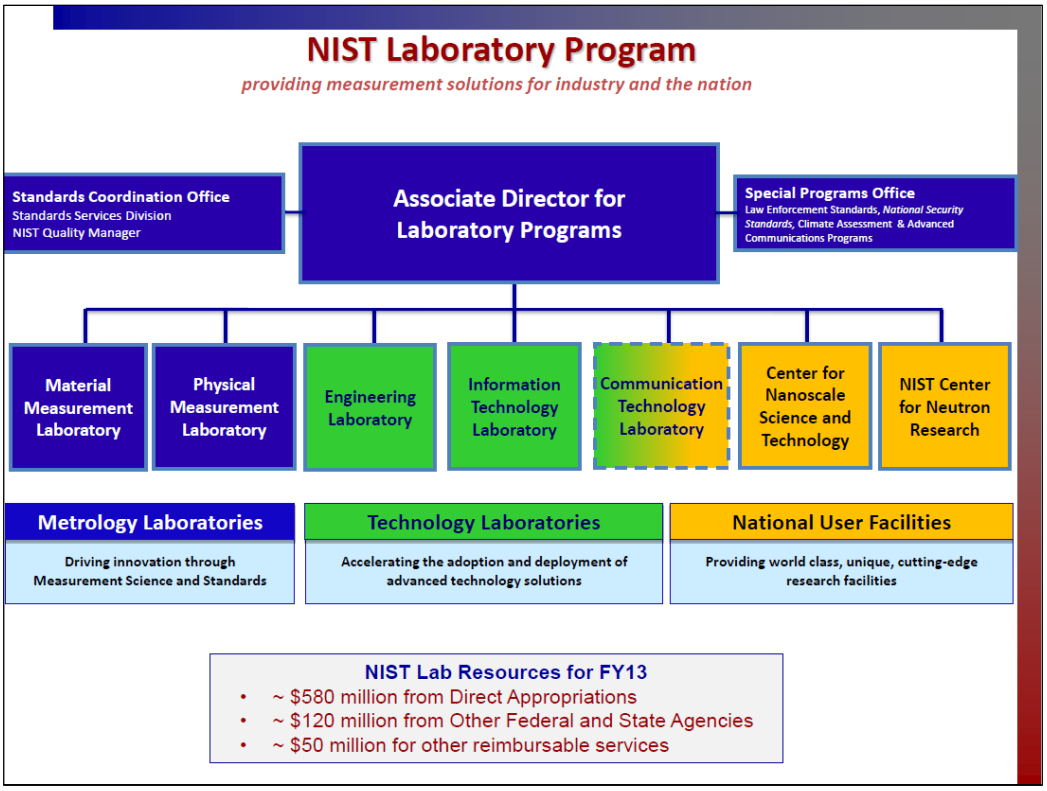
Gaithersburg, MD
62 buildings; 578 acres

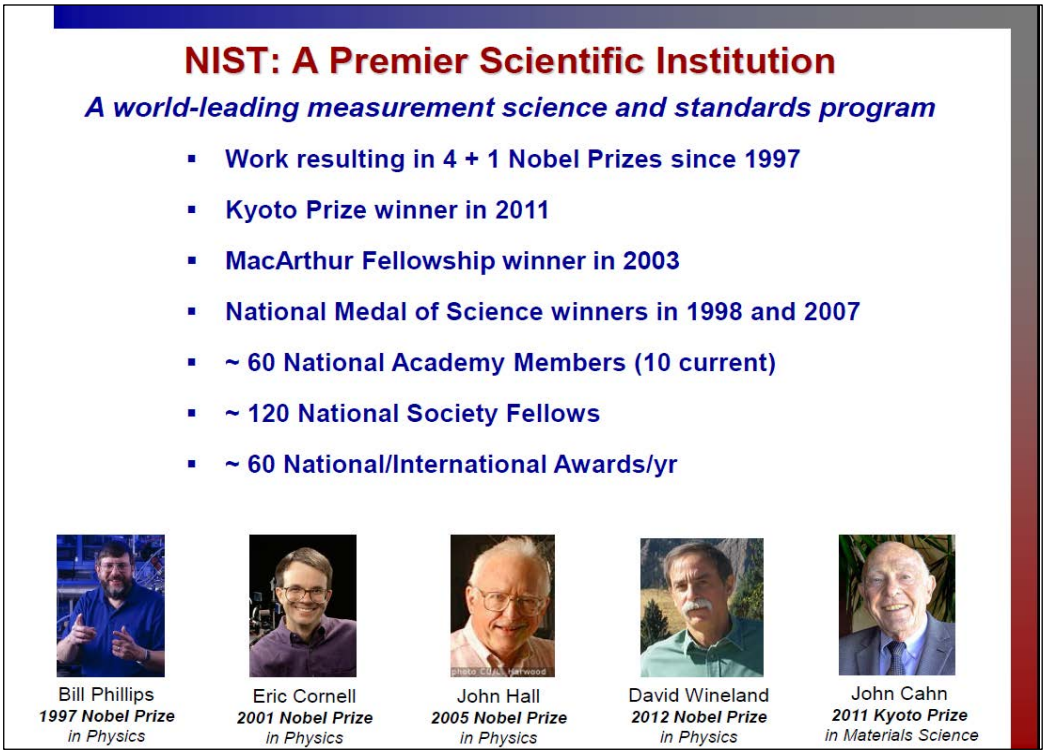
Boulder, CO
26 buildings; 208 acres

+ two sites housing NIST radio stations:
- Ft. Collins; 390 acres
- Kauai; US Navy 30 acre site

and five joint institutes

- JILA – *applied physics*
- JQI – *quantum science*
- IBBR – *biotech*
- HML – *marine science*
- NCC0E – *cybersecurity*


NIST Laboratory Program
providing measurement solutions for industry and the nation
Standards Coordination Office
Standards Services Division
NIST Quality Manager
Associate Director for Laboratory Programs
Special Programs Office
Law Enforcement Standards, National Security Standards, Climate Assessment & Advanced Communications Programs
Material Measurement Laboratory
Physical Measurement Laboratory
Engineering Laboratory
Information Technology Laboratory
Communication Technology Laboratory
Center for Nanoscale Science and Technology
NIST Center for Neutron Research
Metrology Laboratories
Driving innovation through Measurement Science and Standards
Technology Laboratories
Accelerating the adoption and deployment of advanced technology solutions
National User Facilities
Providing world class, unique, cutting-edge research facilities
NIST Lab Resources for FY13
~ $580 million from Direct Appropriations
~ $120 million from Other Federal and State Agencies
~ $50 million for other reimbursable services

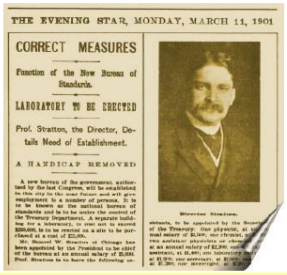

NIST: A Premier Scientific Institution
A world-leading measurement science and standards program
Work resulting in 4 + 1 Nobel Prizes since 1997
Kyoto Prize winner in 2011
MacArthur Fellowship winner in 2003
National Medal of Science winners in 1998 and 2007
~ 60 National Academy Members (10 current)
~ 120 National Society Fellows
~ 60 National/International Awards/yr
Bill Phillips
1997 Nobel Prize
in Physics
Eric Cornell
2001 Nobel Prize
in Physics
John Hall
2005 Nobel Prize
in Physics
David Wineland
2012 Nobel Prize
in Physics
John Cahn
2011 Kyoto Prize
in Materials Science

NIST (NBS) established in 1901

"It is therefore the unanimous opinion of your committee that no more essential aid could be given to

- manufacturing
- commerce
- the makers of scientific apparatus
- the scientific work of Government
- schools, colleges, and universities

than by the establishment of the institution proposed in this bill."


THE EVENING STAR, MONDAY, MARCH 11, 1901

CORRECT MEASURES

Function of the New Bureau of Standards.

LABORATORY TO BE ERECTED

Prof. Stratton, the Director, Details Need of Establishment.

A HANDICAP REMOVED

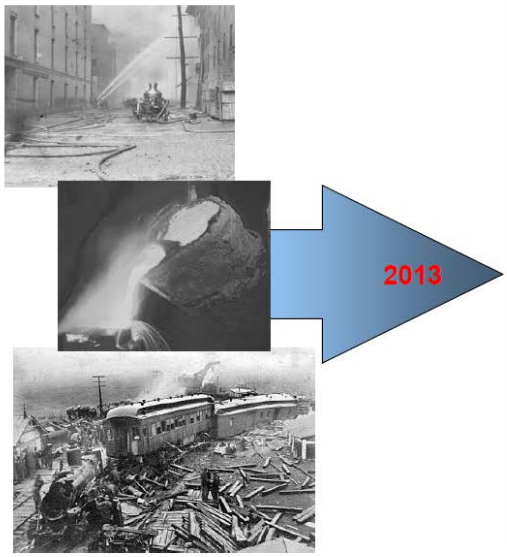
House Committee on Coinage, Weights and Measures ... on the establishment of the National Bureau of Standards (now NIST) May 3, 1900

Organic Act of 1901; Updated in 2008

Functions and activities of the Institute include:

- custody and dissemination of national standards
  - comparison of US national standards with those of other nations
- determination of physical constants and the properties of materials,
- solutions to measurement and standards problems of other government agencies
- providing (Innovation) assistance to industry
  - development of measurements, measurement methods and basic measurement technology
  - development of technology and procedures needed to improve quality, modernize manufacturing processes, ensure product reliability and cost-effectiveness, promote more rapid commercialization …
  - operation of National User Facilities

Since our inception, in addition to maintaining the more traditional National physical standards, **we have also focused a significant portion of our research and measurement services activities on addressing contemporary societal needs.**



NIST Strategic Investment Priorities

- Advanced Manufacturing
- Advanced Materials
- the Environment and Consumer Safety
- Energy
- Bioscience and Health
- Information Technology & Cybersecurity
- Physical Infrastructure
- Forensics & Homeland Security

Topics Discussed Last Year at 2012 NCWM Conference

- Need for "Weights and Measures" throughout the Ages
- NIST: Our Mission, Scope of Activities, and New Organizational Structure
  - Activities in biology and healthcare
- NCWM and NIST: Partners in Measurement Service Delivery
- Measuring our Worth

Today's Topics for Discussion

How NIST is carrying its dual responsibilities as the U.S. National Metrology Institute

- establishing and disseminating the U.S. National Standards for Measurement
  - critical to fair trade/commerce
    - an estimated 80% of global merchandise trade is influenced by testing and other measurement-related requirements of regulations and standards
- playing an increasingly critical role in supporting the U.S. Innovation Infrastructure

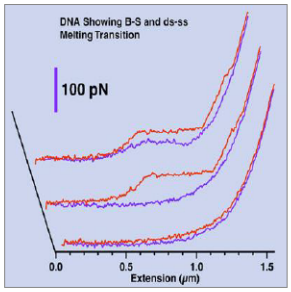
BOTH are critical to our economic security and quality of life.

NIST and NMI's Around the World *are Working to link our global measurement system to the fundamental constants of nature*

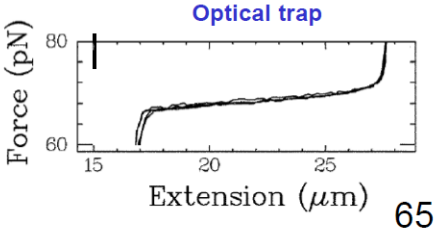
Unit		*Reference value used to define the unit*		
		in current SI	*in the new SI*	
second,	s	$\Delta\nu(^{133}Cs)_{hfs}$	$\Delta\nu(^{133}Cs)_{hfs}$	Cs hyperfine splitting
metre,	m	c	c	speed of light in vacuum
kilogram,	**kg**	$m(\mathcal{K})$	h	Planck constant
ampere,	A	μ_0	e	elementary charge
kelvin,	K	T_{TPW}	k	Boltzmann constant
mole,	**mol**	$M(^{12}C)$	N_A	Avogadro constant
candela,	cd	K_{cd}	K_{cd}	luminous efficacy of a 540 THz source

DNA as an Intrinsic Force Standard

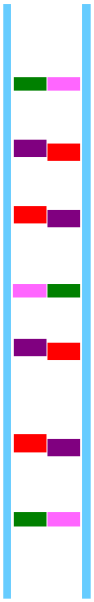
AFM



Optical trap



65 pN



- DNA can be manufactured to atomic precision anywhere in the world.
- The force required to induce DNA transition is used as a biophysics "standard" – but firm metrological basis does not exist
- NIST is working to measure the DNA transition force with traceable metrology using approaches based on both optical and AFM techniques.

Redefinition of the kilogram

Currently:

"The kilogram is the unit of mass; it is equal to the mass of the international prototype of the kilogram."

3rd CGPM, 1901

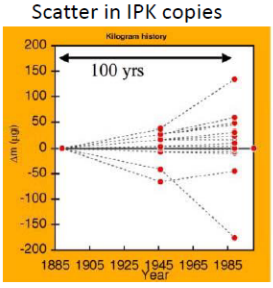
However:

New York Times
(27 May 2003)

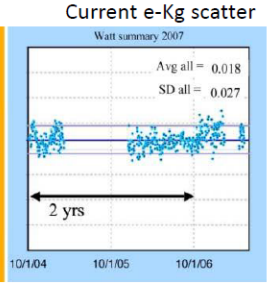
Scientists Struggling to Make the Kilogram Right Again

...The kilogram is getting lighter, scientists say, sowing potential confusion over a range of scientific endeavor...

Scatter in IPK copies



Current e-Kg scatter



Same vertical scale!

Electronic kilogram project

Mass is the only SI unit still defined by a physical artifact

- NIST and other NMIs are working to redefine this unit in terms of natural phenomena
- The "Watt Balance"—compares precise measure of voltage and resistance with force and velocity
- Int. Gen. Com Weights and Measures has recommended this redefinition

© Robert Rathe

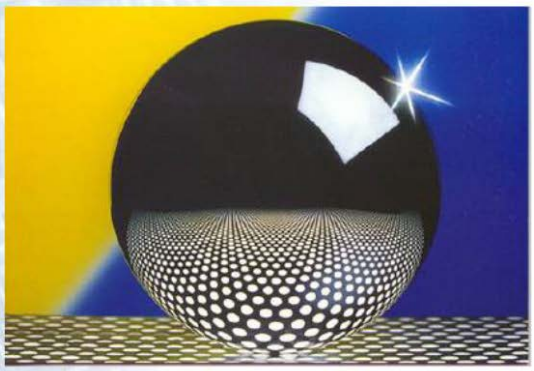
Demonstration of Underlying Principles for Operation of the "Watt Balance" during 2013 UK Royal Society Summer Science Exhibit

To view the embedded material, clink this link: http://www.youtube.com/watch?feature=player_embedded&v=oQsbxT8DQ4U

https://www.youtube.com/watch?feature=player_embedded&v=oQsbxT8DQ4U

Si-sphere for the re-determination of N_A

PTB



$N = V_{Sphere} / V_{Atom}$

$n = N / N_A = m / M$

$N_A = (M / m)\ (V_{Sphere} / V_{atom})$

$$M = x(^{28}\mathrm{Si}) \cdot M(^{28}\mathrm{Si}) + x(^{29}\mathrm{Si}) \cdot M(^{29}\mathrm{Si}) + x(^{30}\mathrm{Si}) \cdot M(^{30}\mathrm{Si})$$

Challenge: Target uncertainty of $U_{M,rel} \leq 1 \cdot 10^{-8}$

CCQM Paris 20.04.-23.04. 2009 (2)

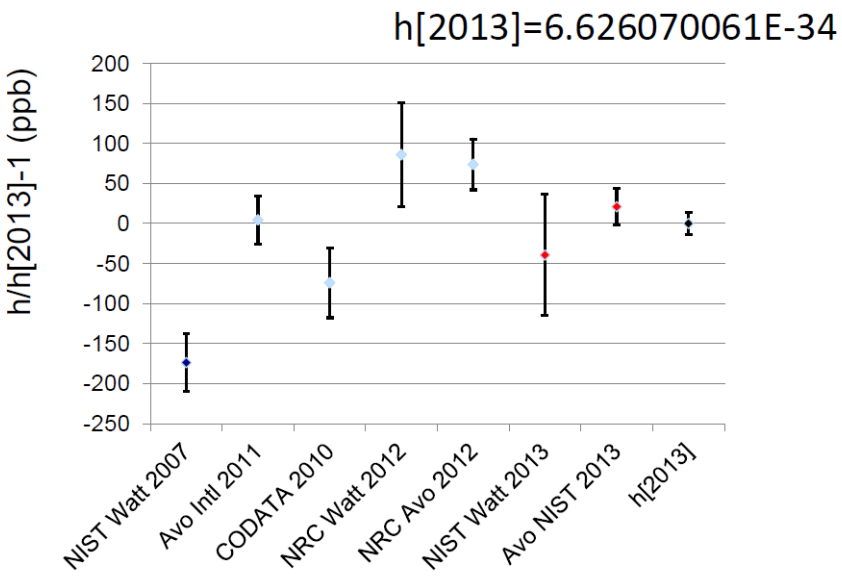
N_A connects to the Planck Constant

$$h = \frac{c\alpha^2 A_r(e) M_u}{2 R_\infty N_A}$$

Constant	Symbol	2006 CODATA value	Relative standard uncertainty
Electron relative atomic mass	$A_r(e)$	5.485 799 0943(23)×10^{-4}	4.2×10^{-10}
Molar mass constant	M_u	0.001 kg/mol	defined
Rydberg constant	R_∞	10 973 731.568 527(73) m^{-1}	6.6×10^{-12}
Planck constant	h	6.626 068 96(33)×10^{-34} Js	5.0×10^{-8}
Speed of light	c	299 792 458 m/s	defined
Fine structure constant	α	7.297 352 5376(50)×10^{-3}	6.8×10^{-10}
Avogadro constant	N_A	6.022 141 79(30)×10^{23} mol^{-1}	5.0×10^{-8}

This provides an independent connection to approaches to the kilogram based on the Planck constant, but requires a total relative uncertainty of ≤ 10^{-8} total relative uncertainty

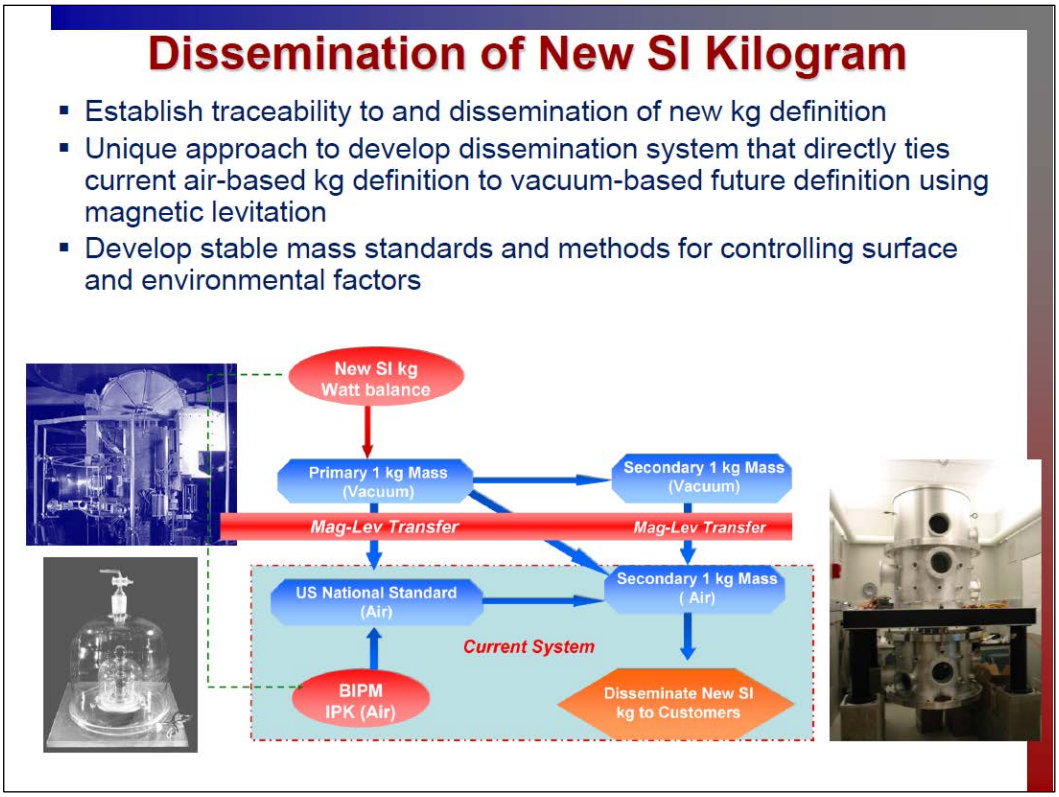
Recent Planck Value Measurements Worldwide

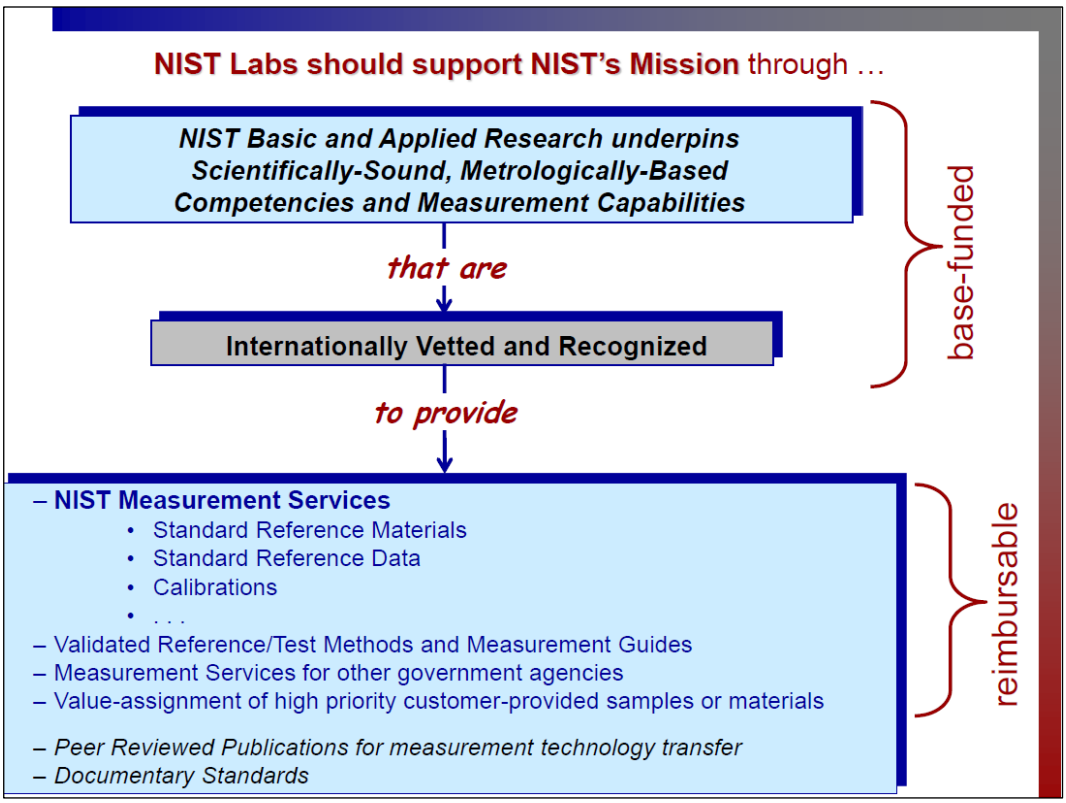


Benefits of the Redefinition of the SI

- The new "Quantum" SI will be fixed by well recognized fundamental constants and properties of atoms
  - This will have achieved the original goals of the Treaty of the Meter – **a set of units based on invariants of nature**
- Will be consistent with all existing legal metrology including OIML R111
- Will allow instrumentation to improve relative accuracy of mass measurements at masses other than 1 kg

Recent progress indicates that we are on a path to a potential redefinition in the next 4-5 years


Dissemination of New SI Kilogram
Establish traceability to and dissemination of new kg definition
Unique approach to develop dissemination system that directly ties current air-based kg definition to vacuum-based future definition using magnetic levitation
Develop stable mass standards and methods for controlling surface and environmental factors
New SI kg
Watt balance
Primary 1 kg Mass
(Vacuum)
Secondary 1 kg Mass
(Vacuum)
Mag-Lev Transfer
Mag-Lev Transfer
US National Standard
(Air)
Secondary 1 kg Mass
(Air)
Current System
BIPM
IPK (Air)
Disseminate New SI
kg to Customers


NIST Labs should support NIST's Mission through …
NIST Basic and Applied Research underpins
Scientifically-Sound, Metrologically-Based
Competencies and Measurement Capabilities
that are
Internationally Vetted and Recognized
to provide
base-funded
– NIST Measurement Services
• Standard Reference Materials
• Standard Reference Data
• Calibrations
• . . .
– Validated Reference/Test Methods and Measurement Guides
– Measurement Services for other government agencies
– Value-assignment of high priority customer-provided samples or materials
– Peer Reviewed Publications for measurement technology transfer
– Documentary Standards
reimbursable

CIPM Mutual Recognition Arrangement

… was established in 1999 in response to a growing need for an open, transparent and comprehensive scheme to give users **reliable quantitative information on the comparability of national metrology services** and to provide the technical basis for wider agreements negotiated for **international trade, commerce and regulatory affairs.**

Requires:

1. **Declaring and documenting calibration and measurement capabilities (CMCs)**
2. **Evidence of *successful* participation in formal, *relevant* international comparisons**
3. **Demonstration of system for assuring quality of each NMI's measurement services**

CIPM Mutual Recognition Arrangement

… was established in 1999 in response to a growing need for an open, transparent and comprehensive scheme to give users **reliable quantitative information on the comparability of national metrology services** and to provide the technical basis for wider agreements negotiated for **international trade, commerce and regulatory affairs.**

- Originally signed in by directors of NMIs of 38 member states of the Metre Convention
- It formalized existing *ad hoc* relationships, especially in the international chemical measurements community
- The MRA has now been signed by the representatives of over 85 institutes

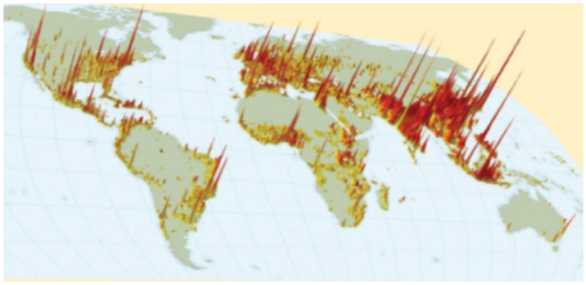
NIST Role in CIPM MRA

Began as an "unfunded mandate" with intense involvement in:

- Documentation of our capabilities for measurement service delivery
  - NIST has **~2,300** of the ~26,000 Calibration and Measurement Capabilities (CMCs) published in the CIPM MRA Appendix C .
- Key Comparisons
  - NIST has participated in **~370** Key Comparisons since the inception and has been the coordinating laboratory for over 80 of these
- Establishing Internationally-recognized Quality Systems for our Measurement Services

CIPM MRA, once looked upon as an "unfunded mandate", has enabled us to identify "spikes" in the increasingly "flat world" and establish strategic collaborations for both research and standards development purposes.

➡ **Better services for our customers**



Graphic Source: "The World is Spiky" by Richard Florida, published in The Atlantic Monthly, October 2005

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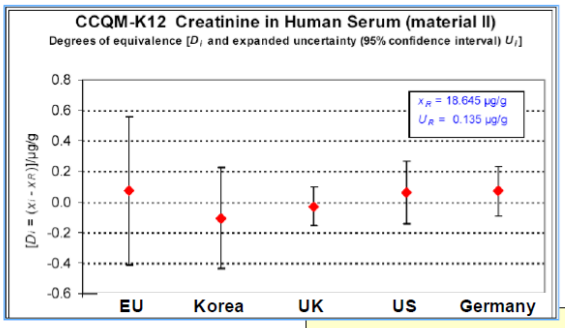
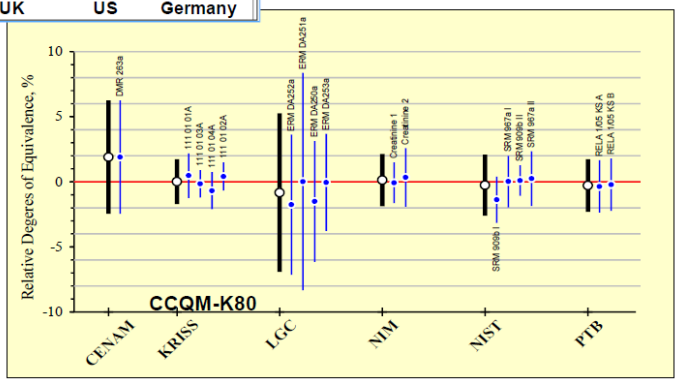
Leveraging NIST Participation in CIPM MRA Activities to better serve our customers



Documented degree of equivalence of measurement capabilities
(that could be used to identify collaborators in delivery of NIST measurement services)

Comparison of value-assigned CRMs for Creatinine in Serum



U.S. Innovation Agenda – NIST has an increasing role

Advanced Manufacturing

- NIST Labs
  - Precision Measurements
  - Bio and Nanomanufacturing
  - Smart Manufacturing
  - Advanced Materials
- National Advanced Manufacturing Program Office
  - AMTech
  - NNMI
- Manufacturing Extension Partnership
  - MTAC

Cybersecurity

- Executive Order – Framework for Critical Infrastructure
- National Cybersecurity Center of Excellence

Advanced Communications

Forensic Science

Healthcare

We (NIST) want to make sure that our programs are focused on
what we "Should Do" rather than what we "Could Do"
to strengthen U.S. Manufacturing, new Materials Discovery and Innovation."

U.S. Innovation Agenda – NIST has an increasing role

Both the American Competitiveness Initiative & the America COMPETES Act called for substantially increased funding for NIST laboratory Programs

Base Growth by Focus Area (2006 - 2013)	$ Millions
• Advanced Communications	+ 5.0
• **Advanced Manufacturing and Materials**	**+ 51.0**
• Bioscience and Health	+ 14.7
• Cybersecurity and IT	+ 44.0
• Energy	+ 21.2
• Greenhouse Gas Measurements	+ 15.2
• Measurement Science/Service	+ 9.0
• Nanotechnology	+ 17.8
• NCNR capacity increase	+ 16.3
• National Physical Infrastructure and Construction	+ 14.4
• Quantum Science	+ 10.8
• Restoration of Core Programs	+ 20.0
• STEM Activities	+ 3.0

Healthcare: Lack of Standards has Economic and Quality-of-Life Implications

U.S. Spends ~ $2.5 trillion on Health Care Annually of which 10-15% is associated with measurements

- **~ 70% of health care decisions are based on results from clinical laboratory measurements**
  - *Yet, standards exist for only 10% of the 700 routinely performed clinical laboratory tests*
- **60 million CT tests performed annually to measure changes in lesions are limited by ability to discern only large changes in size/metabolism**
  - *This is a direct consequence to lack of standards to monitor equipment performance*
- **Costs of repeat measurements amounts to 1.5 B US$ per year in Germany according to the German Health Report of 1998 (www.gbe-bund.de)**

Measurement Bias also Affects Quality of Life and leads to

- **Incorrect diagnosis and treatment**
- **Impairment of patient well-being**

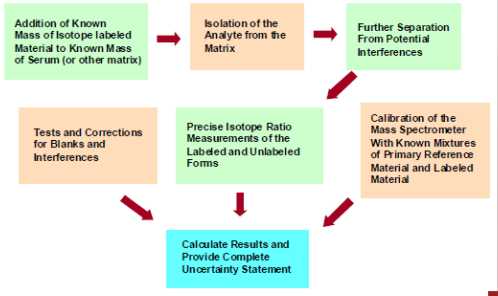
NIST has maintained Standards for 13+ Health Status Markers for 25+ years

Reference Systems are Currently in Place for Many Well-Defined Markers that are:

- Relatively small well-defined molecular or elemental species
- Typically, can be determined using isotope-dilution GC or ICP ID/MS-based methodologies

Marker	*Disease State*
Calcium	Cancer, Blood Clotting
Chloride	Kidney Function
Cholesterol	Heart Disease
Creatinine	Kidney Function
Glucose	Diabetes
Lithium	Antipsychotic Treatment
Magnesium	Heart Disease
Potassium	Electrolyte Balance
Sodium	Electrolyte Balance
Triglycerides	Heart Disease
Urea	Kidney Function
Uric Acid	Gout
Vitamins	Nutrition Status

Isotope Dilution/Mass Spectrometry-based Definitive Methods

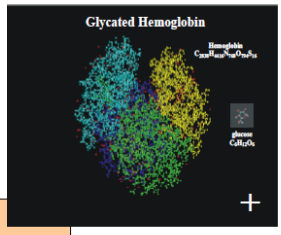



Glucose

Laboratory Medicine: NIST Program Expansion Plans

Reference systems for markers that typically exhibit:

- High molecular mass (>20,000 daltons)
- Heterogeneity, low concentration, instability of analyte form
- Cannot all be determined using GC- ID/MS or ICP/MS-based methodologies
- Such as the following:



Protein Analysis

- Single Blood Protein Biomarkers
  - **Troponin-I** — ***Myocardial Infarction***
  - C-Reactive Protein — *Risk of Heart Attack*
  - **PSA** — **Prostate Cancer**
  - Albumin — *Kidney Function*

Genetic Testing

- Single Gene Mutations
  - Genetics Directed Therapy
    - **Her2-Nu** — ***Breast cancer***
    - CYP2C9 and VKORC1 — *Warfarin Dosage*
    - Kras — *Colon Cancer*
  - Diagnostics
    - DNA Triplet Repeat — *Fragile X*
    - CAG Repeats — *Huntington's Disease*
- Genome Sequencing to support Direct to Consumer Genetic Testing

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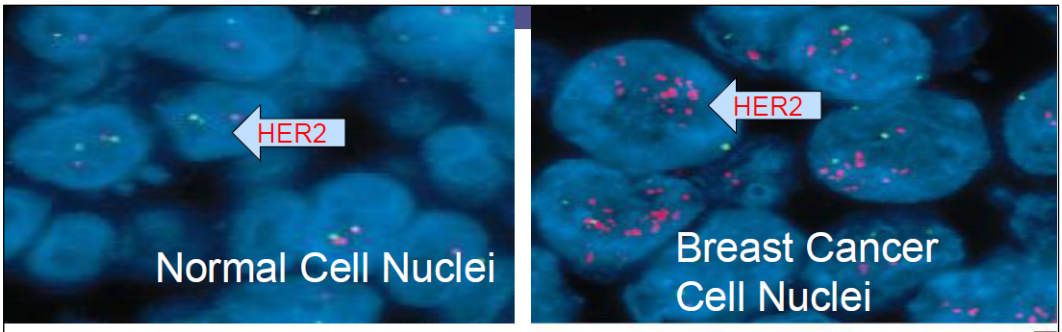


"The College of American Pathologists and the American Society of Clinical Oncology, which issued guidelines for the HER-2 …. estimated that around 40% of HER-2 testing may be inaccurate" (20% false positive; 20% false negative)

HER-2 Tests

180,000/year

False positive → **Get Herceptin unnecessarily**
- Up to 36,000
- Expensive
- Numerous side effects

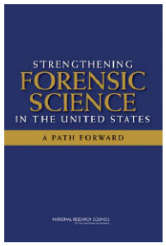
False negative → **Herceptin Treatment withheld**
- Up to 36,000
- Inappropriate treatment
- Increased morbidity
- Increased mortality

http://online.wsj.com/article/SB119941325367266813.html

Helping Ensure the "Science" in Forensic Science

A landmark forensics report by U.S. National Research Council of the National Academies was issued in Feb. 2009.

"With the exception of nuclear DNA analysis, no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source."



New Role for NIST:

- **National Commission on Forensic Science**
  - Was established via MoU on Feb. 8, 2013 between DOJ and NIST
    - to help improve the reliability of forensic science data/information and to develop policy recommendations for the U.S. Attorney General.
    - to be comprised of forensic science practitioners, academic researchers, prosecutors, defense attorneys, judges, and other relevant stakeholders
- **NIST will:**
  - Co-Chair the Commission
  - Administer Guidance Groups of subject-matter experts for specific forensic science disciplines
  - Validate select existing forensic science methods and guidance
  - Develop and critically evaluate new methods

Forensics at NIST

NIST has a long and rich history of work in support of law enforcement.

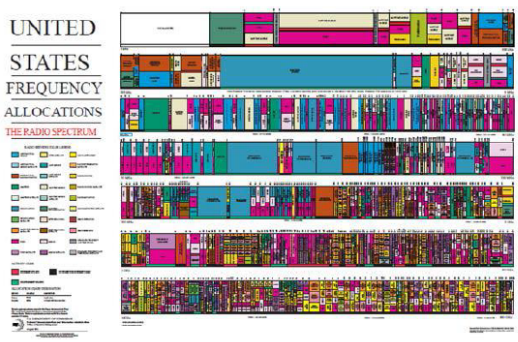
Currently providing research and measurement services such as validated test methods, Standard Reference Materials, and Reference Data in areas such as:

- crime scene investigations
- computer forensics
- fire investigations
- drug detection
- drunk driving testing
- biometrics (fingerprints and handwriting analysis)
- firearms/ballistics
- standards for body armor, nonlethal weapons
- explosives detection technologies
- sports integrity/fairness
- genetics and DNA-based identification

that support the Departments of Defense, Justice, and Homeland Security in carrying out their programs.

Why the focus on advanced communications?

- Technology advances in communications have revolutionized how we work, entertain, govern, and defend ourselves.
- Multiple near and long-term challenges must be addressed
  - Spectrum scarcity;
  - Broadband access driving needs for ever-higher bandwidth;
  - The vulnerability of all Internet-capable devices to a variety of security threats; and
  - The threat of natural disasters and terrorism on communications infrastructure.



Response – The Center for Advanced Communication

NIST and NTIA will work together to establish the Center for Advanced Communications

- MOU between NIST and NTIA to establish the Center signed on May 24th, 2013

Planned Center Objectives:

- Enhancing mission effectiveness of both agencies by better coordinating research and testing functions of NIST and NTIA
- Promoting interdisciplinary research, development, and testing in advanced communication-related areas (radiofrequency technology, digital information processing, cybersecurity, etc.)
- Providing a single focal point for engaging both industry and other government agencies

Program Update: Improving Critical Infrastructure Cybersecurity a.k.a. Cybersecurity Executive Order (EO)

"…America must also face the rapidly growing threat from cyber attacks. …. I signed a new executive order that will strengthen our cyber defenses by increasing information sharing, and developing standards to protect our national security, our jobs, and our privacy…"

- President Obama in the 2013 State of the Union Address

- Leverages two key NIST roles – as a convener and as a technical agency
- NIST to develop standards framework to reduce cyber risks to critical infrastructure (the "Cybersecurity Framework").
- Partnership with industry, standards organizations and government agencies
- Short time frame – draft framework in 8 months, first framework in 1 year.

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Credit: K Talbot/NIST & Shutterstock

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Author: Pkrao
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Program Update: National Cybersecurity Center of Excellence (NCCoE)

- National Cybersecurity Excellence Partners (NCEP)

- Cisco Systems Inc,	- RSA
- Hewlett-Packard,	- Splunk
- HyTrust	- Symantec
- Intel	- Vanguard Integrity Professionals
- McAfee	- Venafi
- Microsoft	

NCCoE
NATIONAL CYBERSECURITY CENTER OF EXCELLENCE

- In process of setting up FFRDC as governance structure.

Lack of recognition is a good thing!

The weights and measures system in the U.S. works so well that its accuracy is taken for granted.

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It's not always pleasant, but it's fair -- Thanks to your efforts.

… and We're Here to Help !!!

We are continuing the ramp up of our training efforts

- **IACET Accredited Training Program**
- **20 new regional instructors trained at NIST last April**
- **Developing new hands-on and online courses**
- **9 classes being offered around the country between now and November**


NIST


NIST


NIST

Challenges to Weights and Measures Officials and the NCWM

- Doing more with less
- New Technologies (GPS for Taxis, weighing in motion scales
- New Fuels (hydrogen, electricity, LNG, CNG)

But through it all, we're here to help !!!!

Thanks for Your Attention

Willie E. May
Associate Director for Laboratory Programs & Deputy Director
National Institute of Standards and Technology
100 Bureau Drive
Gaithersburg, Maryland 20899-1000

(301) 975-2300
wem@nist.gov

Questions and Comments?

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Chairman's Address

National Conference on Weights and Measures

Louisville, Kentucky

July 16, 2013

Stephan Benjamin

North Carolina Department of Agriculture and Consumer Services

Thank you Commissioner Comer and Dr. May for being with us today:

Good morning and welcome to the 98th Annual Meeting of the National Conference on Weights and Measures (NCWM). It has been my honor and privilege to serve as Chairman this past year. I'll admit it has been a challenge at times, but it has been a rewarding experience.

My theme this year was "On the Path to Tomorrow." With that in mind, I would like to briefly review some of the accomplishments of NCWM this past year. We just launched our new website, which has a number of new features and is friendly to mobile devices. The Professional Certification Program launched two new tests, Small Capacity Weighing Systems Class III and Package Checking Basic and they are working on two more. We have advertised for a new staff position that will allow for the expansion of the VCAP program and provide another option for NTEP evaluations.

I have mentioned some of these items as I attended the regional meetings this year. While there, I often heard a comment or two about membership. How the number of members has declined the last few years along with the budgets of the weights and measures programs as well as our industry members. The Board of Directors has worked for a number of years to make improvements in our services and benefits, in part, to make membership attractive; to make it of value to a member. While membership numbers are great, what keeps us successful is *participation*.

This is most obvious with the Standing Committees and the Board of Directors, as we sit before you through open hearing and voting sessions. Then we have our Subcommittees, the NTEP Sectors, Work Groups and Task Groups. You will find a list of these willing participants in the front of each Publication 15 and 16. In the last newsletter, there was a list of Subject Matter Experts or SMEs that have contributed to the Professional Certification Program. I would even extend this list of participants to the Regional Associations as they mirror the NCWM structure.

My point is that participation is critical to this organization. There are many places for you or members of your staff to contribute, even if one cannot attend the Interim or Annual meetings. The SMEs and NTEP Sectors are excellent examples of this and include a good mix of regulators and industry. NCWM and National Institute of Standards and Technology (NIST), Office of Weights and Measures (OWM) have the ability to host conference calls and web-meetings. These have been used by Work Groups and Task Groups which has allowed for a lot of work to be done between meetings and involve new people who otherwise could not attend.

So, I would like to thank all of you that have stepped up and participated in one or more of the many committees, subcommittees or other groups within NCWM and the Regional Associations, and I hope you continue to do so. I would encourage all of you to seriously consider accepting one of these roles if you are asked; or volunteering for one if you have an interest or expertise. It is also an opportunity to both learn and teach.

The newly formed Training Manual task group, for example, is in need of members. Their efforts are complimentary to the Professional Certification Program, so it would benefit many outside this room when they are successful with their task.

Don't be shy! I was the manager of our fuel quality program when I became the Director of the Standards Division in August 2004. I knew very little about the Conference then. I had attended one Interim Meeting in January2005 before I was asked to serve on the Laws and Regulations Committee. I will admit I hesitated to accept the appointment. However, I decided what better way for me to learn this new world of weights and measures and start making contacts with my peers and industry. Participation is part of where the NCWM's strength lies.

In closing, what we do here at NCWM, both at this meeting and outside of it, in our committees and work groups, is a team effort. I would like to thank the membership and the Board of Directors for their support this past year. The NCWM staff went through a lot of changes, but they were always professional and accomplished their goals. Thank you to our Associate Members and Measurement Canada as they actively participate in our processes. Finally, I would like to recognize our partners in the NIST Office of Weights and Measures, for without their technical expertise and daily work in the areas of Weights and Measures and Legal Metrology we would be hard pressed to move forward on many of the issues that come before us.

Thank you all for allowing me to be your chairman this past year and I look forward to working with John this coming year.

Chairman Elect's Address

National Conference on Weights and Measures

Louisville, Kentucky

July 16, 2013

John Gaccione

Westchester County, New York

Good morning and thank you.

I begin by thanking Steve Benjamin. Steve made being Chairman look easy. But the reality is that Steve never stopped working for the National Conference on Weights and Measures (NCWM). NCWM continues to be a well-respected organization because of Steve. Thank you, Steve, for all of your guidance in preparing me in my new role as NCWM Chair.

I would also like to thank all the members of the Conference for electing me Chairman of NCWM. I am humbled, and it is an honor I do not take lightly.

More thanks go to Kurt Floren and Tim Tyson for their advice and help. And to all the previous chairpersons for their hard work and dedication in bringing the Conference to where it is today, an organization that is respected, recognized, and a model for other organizations on how to get things done.

Thank you NCWM staff: Don, LuAnne, Elisa, and Jim. Everyone should take a moment to see how much they do and how well they do it. And thanks also go to Carol Hockert and the National Institute of Standards and Technology (NIST) staff for their never ending assistance.

With that, I promise I will be brief, "not boxers," briefs.

Going slightly off course, I wanted to share with everyone a column that some of you may have seen, but what it says is important.

It appeared in the "About.com Guide" (http://moneyover55.about.com/b/2012/08/13/weights-measures-and-the-election.htm), August 13, 2012.

Weights, Measures, and the Election

by Dana Anspach, she writes:

> As I'm driving to work today the radio morning show began talking about my state's Weights and Measures Department. Apparently they go around testing gas pumps to see if in fact we are getting what we pay for at the pump. I had no idea such a department existed. The conclusion? Of the pumps tested about 200 some pumps were overcharging... but 800 were giving us more than we paid for.
>
> Until I heard this, it never even crossed my mind to wonder if I was being ripped off at the gas pump. How the heck would I know if in fact 16.3 gallons was delivered? I simply trusted the system.
>
> It wasn't until this morning's drive that it hit me that the reason I can trust the system is because some of my tax payer dollars pay for the Weight and Measures department. I wonder how many

> other things my tax payer dollars pay for that I am simply unaware of, and would in fact, be in favor of?

Words well written and worth repeating. Spread the word.

Today we face challenges that were never dreamed about 10 or 15 years ago.

Right now you can:

- Catch up on television news, order lunch and earn points towards future purchases while filling up at the gas pump.
- Fuel up with an "alternative" to good old gasoline and diesel.
- Stand in an aisle in a store and compare prices with other nearby stores and on the Internet, and read consumer reviews about a product.
- Go into a grocery store, scan and bag your own purchases long before you reach the cashier. Or from home, place an order with the supermarket or grocery store and have it delivered to your door step.
- Track a purchase on its long journey from its supplier to your home.
- Charge your electric vehicle while at your workplace or at transportation hub or while shopping.
- Look at the label on an item and know not just its weight and who packaged it, but its nutritional value, its country of origin and under what conditions it was grown, prepared, and packaged.
- Encounter a new method of sale for how a commodity is sold.

Every day, we see how rapidly change occurs.

NCWM must be ready to meet these new challenges.

While we continue to ensure a fair and equitable marketplace, we must recognize that change and new technology arrive at a much faster pace than it did in the past.

With that my theme for the coming year is *"Meeting Tomorrow's Challenges Today."*

I constantly remind my own staff that "change is good". Change is not easy.

Change many times leads to a new, more efficient way of getting things done. Change allows the formulation of new ideas. Change allows us to meet tomorrow's challenges.

Paraphrasing President John Kennedy, "We chose to do things, not because they are easy, but because they are hard, because the results will measure the best of our energies and skills."

Are we ready for those new challenges? I believe we are; with everyone's participation, NCWM is ready to meet new challenges.

Thank you all, please arrive home safely, and see you in Albuquerque.

And now, my appointments:

Specifications and Tolerances Committee: Matt Curran, Florida

Laws and Regulations Committee: Craig Vanburen, Michigan

Steve Grabski, Walmart

Professional Development Committee: Julie Quinn, Minnesota

Richard Shipman, Rice Lake Weighing Systems

Nominating Committee: Stephen Benjamin, Chair, North Carolina

Charles Carroll, Massachusetts

Tim Tyson, Kansas

Tim Chesser, Arkansas

Joe Gomez, New Mexico

Frank Greene, Connecticut

Angela Godwin, Ventura County, California

Chaplain: Steve Langford, Cardinal Scales

Parliamentarian: Lou Straub, Fairbanks Scales

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2013 National Conference on Weights and Measures

Special Award Recipients

Contribution Award:

Maureen Henzler, Kansas Department of Agriculture

Distinguished Service Awards:

Mike Belue, Retired, Belue Associates

Wes Diggs, Retired, Virginia

Ken Simila, Retired, Oregon

Lou Straub, Fairbanks Scales

Juana Williams, NIST Office of Weights and Measures

Lifetime Achievement Award:

Dr. Charles (Charley) H. Greene, Retired, New Mexico

Attendance Recognition:

5 Years

• David Calix	NCR Corporation
• Ryanne Hartman	Michigan Department of Agriculture
• William Hornbach	Chevron Products Company
• Henry Kellogg	Compucom
• Michael Kerr	Southern Company Services
• Russ Lewis	Marathon Petroleum Company LP
• Tim Lloyd	Montana Weights and Measures Bureau
• Girard Lukowiak	City of East Orange, New Jersey
• James McGetrick	BP Products
• Paul Moyer	Nebraska Division of Weights and Measures
• Rebecca Richardson	MARC IV Consulting
• Mike Roach	VeriFone

10 Years

• Joe Benavides	Texas Department of Agriculture
• Paul Glowacki	Murray Equipment, Inc.
• Raymond Johnson, Jr.	New Mexico Department of Agriculture
• Brett Saum	San Luis Obispo County Weights and Measures, California
• Jack Walsh	Town of Wellesley, Massachusetts

15 Years

• Stacy Carlsen	Marin County Weights and Measures, California
• Ed Luthy	Schenck Process
• Curtis Williams	CP Williams Energy Consulting, LLC

20 Years

• Marilyn Herman	Herman and Associates
• Neal Nover	WinWam Software

25 Years

• Richard Tucker	RL Tucker Consulting, LLC

35 Years

Ross Andersen	no affiliation