

The following is a reconciliation from the statutory federal income tax rate to our effective income tax rate:

	Years Ended December 31,		
	2019	2018	2017
	(Percentage of pre-tax income)		
Statutory federal income tax rate	21.0 %	21.0 %	35.0 %
State income taxes, net of federal income tax benefit	(1.6)%	(1.5)%	3.9 %
Impairment of goodwill	(28.6)%	(36.6)%	— %
Change in liability for unrecognized tax position	(0.2)%	1.3 %	1.0 %
Tax reform	— %	(5.9)%	(209.8)%
Net foreign income taxes	(0.5)%	1.8 %	(0.7)%
Foreign dividend paid to a domestic parent company	— %	— %	0.2 %
Research and development credits	0.1 %	0.9 %	(1.4)%
Tax impact on sale of data centers and colocation business	— %	— %	5.0 %
Tax benefit of net operating loss carryback	— %	9.1 %	— %
Level 3 acquisition transaction costs	— %	— %	6.0 %
Other, net	(0.8)%	(1.0)%	3.6 %
Effective income tax rate	(10.6)%	(10.9)%	(157.2)%

The effective tax rates for the years ended December 31, 2019 and December 31, 2018 include a \$1.4 billion and a \$572 million unfavorable impact of non-deductible goodwill impairments, respectively. Additionally, the effective tax rate for the year ended December 31, 2018 reflects a \$92 million unfavorable impact due to finalizing the impacts of tax reform. Partially offsetting these amounts is a \$142 million benefit generated by a loss carryback to 2016. The effective tax rate for the year ended December 31, 2017 reflects the benefit of approximately \$1.1 billion from the re-measurement of deferred taxes as noted above, a \$27 million tax expense related to the sale of our colocation business and \$32 million tax impact of non-deductible transaction costs related to the Level 3 acquisition.

The tax effects of temporary differences that gave rise to significant portions of the deferred tax assets and deferred tax liabilities were as follows:

	As of December 31,	
	2019	2018
	(Dollars in millions)	
Deferred tax assets		
Post-retirement and pension benefit costs	\$ 1,169	1,111
Net operating loss carryforwards	3,167	3,445
Other employee benefits	134	162
Other	577	553
Gross deferred tax assets	5,047	5,271
Less valuation allowance	(1,319)	(1,331)
Net deferred tax assets	3,728	3,940
Deferred tax liabilities		
Property, plant and equipment, primarily due to depreciation differences	(3,489)	(3,011)
Goodwill and other intangible assets	(3,019)	(3,303)
Other	—	(23)
Gross deferred tax liabilities	(6,508)	(6,337)
Net deferred tax liability	\$ (2,780)	(2,397)